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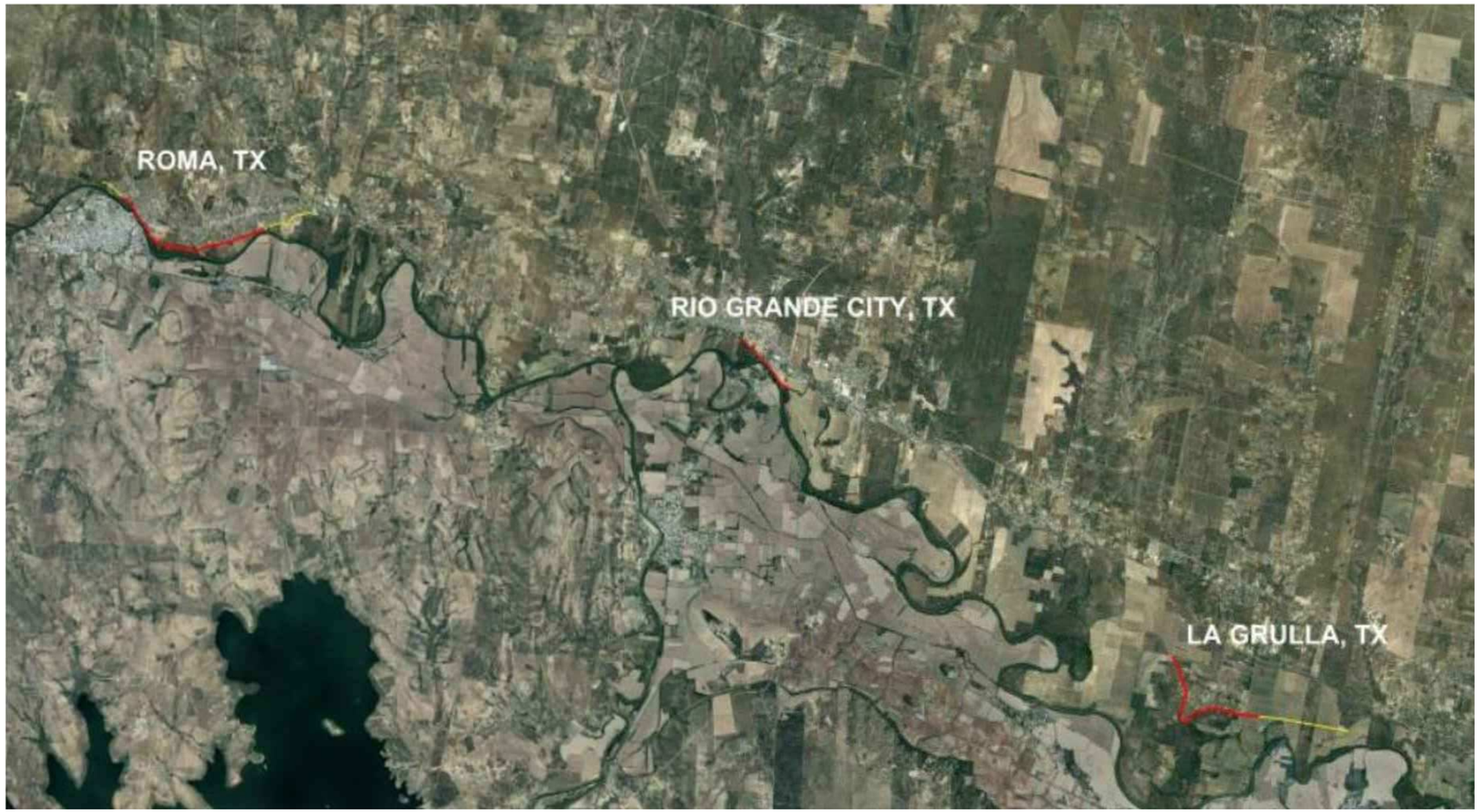
# RGV 06 - BORDER INFRASTRUCTURE CONSTRUCTION PROJECT
# RIO GRANDE VALLEY (RGV) CONSTRUCTION OF BOLLARD FENCE




## ROMA, TEXAS
## SOLICITATION NO.:

US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PROJECT LOCATION

SHEET ID
ROMA
G-000

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GALVESTON DISTRICT

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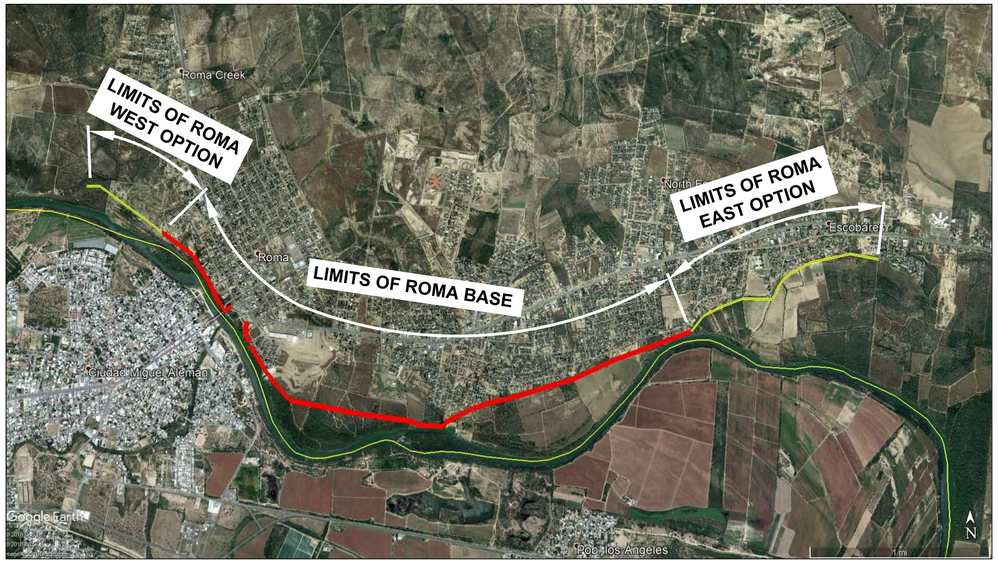
# RGV 06 - BORDER INFRASTRUCTURE CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV) CONSTRUCTION OF BOLLARD FENCE ROMA WEST OPTION, BASE AND EAST OPTION




ROMA, TEXAS

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## INDEX



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US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD. SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV) CONSTRUCTION OF BOLLARD FENCE

COVER SHEET

SHEET ID
ROMA
G-001

## GENERAL ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS INDICTED MAY APPEAR ON THESE DRAWINGS

| | |
|---|---|
| BOTTOM | BOT |
| CENTERLINE | CL |
| CORRUGATED METAL PIPE | CMP |
| COLUMN | COL |
| CONCRETE | CONC |
| DIAMETER | DIA |
| DOWEL | DWL |
| DRAWINGS | DWG(S) |
| EACH WAY | EW |
| ELEVATION | EL |
| ELECTRICAL | ELEC |
| EDGE OF PAVEMENT | EP |
| EXPANSION | EXP |
| FIRE HYDRANT | FH |
| FLOWLINE | FL |
| GALVANIZED | GALV |
| GATE VALVE | GV |
| GUTTER | G |
| HORSEPOWER | HP |
| HORIZONTAL | HORIZ |
| INSIDE DIAMETER | ID |
| IRON ROD | IR |
| LEFT | LT |
| MANHOLE | MH |
| MAXIMUM | MAX |
| MINIMUM | MIN |
| MISCELLANEOUS | MISC |
| NUMBER | # |
| NUMBER | NO |
| ON CENTER | OC |
| OUTSIDE DIAMETER | OD |
| PAVEMENT | PVMT |
| POINT OF CURVATURE | PC |
| POINT OF INTERSECTION | PI |
| POINT OF TANGENCY | PT |
| POLYVINYL CHLORIDE | PVC |
| RADIUS | R |
| REMOVE | REMOV |
| REINFORCING | REINF |
| REINFORCED CONCRETTE PIPE | RCP |
| RIGHT | RT |
| RIGHT OF WAY | ROW |
| SANITARY | SAN |
| SCHEDULE | SCHED |
| SECTION | SECT |
| SILT FENCE | SF |
| STAINLESS STEEL | SS |
| STORM WATER POLLUTION PREVENTION | SWPP |
| SPECIFICATIONS | SPECS |
| STORM | STM |
| SEWER | SEW |
| TOP | T |
| TOP OF | T/ |
| TYPICAL | TYP |
| UNLESS OTHERWISE NOTED | UON |
| VARIES | VAR |
| VERTICAL | VERT |
| WITH | W/ |
| WELDED WIRE FABRIC | WWF |

## GENERAL SYMBOLS LIST

- BREAK LINE
- TREE LINE
- OVERHEAD COMMUNICATION LINE (Cx)
- UNDERGROUND COMMUNICATION LINE (Cx)
- STORM DRAINAGE LINE (SDx)
- WATER OR IRRIGATION LINE (24" & SMALLER LINE)
- EXISTING BARBED WIRE FENCE
- EXISTING ELECTRIC (OVERHEAD)
- ELECTRIC (UNDERGROUND)
- OIL OR PETROLEUM LINE (O)
- TELEPHONE LINE
- EXISTING WATER LINE (Wx)
- SURVEY CONTROL MONUMENT
- SIGN
- DITCH
- DITCH CENTER LINE
- ROADWAY
- ENFORCEMENT ZONE LINE (RW)
- EDGE OF EXISTING ASPHALT
- FIRE HYDRANT
- DOWN GUY
- TELEPHONE/SIGNAL PULL BOX
- PROPERTY CORNER
- CULVERT
- PULL BOX FOR POWER/CONTROL
- PULL BOX FOR TELEPHONE/INSTRUMENTATION
- POSSIBLE KEY PAD LOCATION
- GATE PIER FOUNDATION
- R.O.W. — RIGHT-OF-WAY
- TRAFFIC FLOW PATTERN
- EXISTING RETAINING WALL

- PROPOSED GATE
- EXISTING BORDER FENCE CORNER
- 31 — EXISTING CONTOUR
- 34 — PROPOSED CONTOUR
- PROPOSED BOLLARD FENCE
- SF — SILT FENCE
- MAIL — MAILBOX
- GP — GUARD POST (BOLLARD)
- BOREHOLE
- PP/XFMR — POWER POLE WITH TRANSFORMER
- PIPE — VERTICAL PIPE
- CDC — COMMUNICATION DROP CONNECTION
- C-RISER — COMMUNICATION RISER
- C-UNG — UNDERGROUND COMMUNICATION MARKER
- CAM — SECURITY CAMERA
- UTILITY POLE
- EDC — ELECTRIC DROP CONNECTION
- GROUND REM
- LIGHT
- LIGHT POLE
- XXX — ELECTRIC METER
- ELECTRIC PANEL
- SWITCH
- J — JUNCTION BOX
- WV — WATER VALVE
- WATER METER
- IV — IRRIGATION VALVE
- EVERGREEN TREE
- DECIDUOUS TREE
- ASPHALT ROADWAY
- CONCRETE
- AGGREGATE ROADWAY

US Army Corps of Engineers ®

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DRAWN BY: X
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CONTRACT NO.: W912GG-15-D-0007-F0259
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2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

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CONSTRUCTION OF BOLLARD FENCE

# ABBREVIATIONS AND SYMBOLS LIST

SHEET ID
ROMA
G-002

XX% PRELIMINARY DESIGN (NOT FOR CONSTRUCTION)

## GENERAL:

1. ANY AND ALL DAMAGE TO EXISTING ROADS, CONCRETE LINED DITCH, FENCE UTILITIES AND ALL OTHER EXISTING STRUCTURES RESULTING FROM THE CONTRACTOR'S CONSTRUCTION SHALL BE REPLACED AND REPAIRED TO ORIGINAL CONDITION OR BETTER AND TO THE SATISFACTION OF THE COR AT THE EXPENSE OF THE CONTRACTOR.
2. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWING OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND OR GREATER QUANTITY. STRENGTH OR SIZE INDICATED, SPECIFIED, OR NOTED SHALL BE PROVIDED.
3. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT NOT LIMITED TO,THE ADDITION OF WHATEVER TEMPORARY BRACING, SHORING, GUYS OR TIE-DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER COMPLETION OF THE PROJECT.
4. THE CONTRACTOR , AT HIS OWN EXPENSE, SHALL RESPOND TO COMPLAINTS REGARDING DUST AND NOISE POLLUTION RESULTING FROM HIS WORK.
5. THE CONTRACTOR SHALL PROVIDE SAFE ACCESS TO AND FROM ALL DRIVEWAYS AND STREETS, PAVED OR UNPAVED, AT ALL TIMES DURING CONSTRUCTION.
6. THE CONTRACTOR SHALL VERIFY AND CHECK ALL DIMENSIONS, LOCATIONS, ELEVATIONS AND DETAILS SHOWN ON THESE DRAWINGS PRIOR TO START OF CONSTRUCTION. ANY UNCERTAINTIES AND DISCREPANCIES SHALL BE IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER FOR CLARIFICATION PRIOR TO COMMENCING THAT WORK FEATURE..
7. THE PROJECT SHALL BE SECURED AT ALL TIMES DURING CONSTRUCTION.
8. THE CONTRACTOR SHALL DISPOSE OF ALL CONSTRUCTION DEBRIS AND OTHER WASTE MATERIAL OFF THE GOVERNMENT OWNED LAND AT AN APPROVED OFF-SITE DISPOSAL AREA IN ACCORDANCE WITH APPLICABLE REGULATORY AGENCY REQUIREMENTS. ALL PERMITS REQUIRED FOR OFF-SITE DISPOSAL SHALL BE OBTAINED BY THE CONTRACTOR.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLIANCE WITH AND THE ENFORCEMENT OF ALL APPLICABLE SAFETY REGULATIONS. ACCORDING TO EM 385-1-1 SAFETY AND HEALTH REQUIREMENTS MANUAL.
10. IN CASE OF DISCREPANCY BETWEEN THE SPECIFICATIONS AND CONSTRUCTION DOCUMENTS, THE MORE STRINGENT SHALL APPLY.
11. DURING CONSTRUCTION, STRUCTURE MAY BE BUOYANT. IN THE EVENT OF FAILURE OF DEWATERING SYSTEM AND THE EXCAVATION BECOMES FLOODED OR THE SURROUNDING GROUND BECOMES SATURATED. THE CONTRACTOR SHALL SUBMIT A PLAN TO PREVENT FLOATING OF THE STRUCTURE.
12. ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE USACE, DHS AND USIBWC.
13. THE CONTRACTOR SHALL PRESERVE AND PROTECT OR REMOVE (WITH PRIOR WRITTEN APPROVAL OF AFFECTED PROPERTY OWNER'S) ALL TREES, SHRUBS, HEDGES, RETAINING WALLS. LANDSCAPING, BUILDINGS, WALKS,ETC..., IN OR NEAR CONSTRUCTION AREA. CONTRACTORS SHALL TRIM AND / OR CUT AS NECESSARY ANY TREE OR BRANCH WITHIN OR EXTENDING INTO THE ENFORCEMENT ZONE IN ORDER TO PROVIDE A CLEAR ZONE.
14. INTERMITTENT SURVEY MONUMENTS MAY BE UNCOVERED DURING FENCE REMOVAL THAT ARE NOT SHOWN ON THE PLANS. THESE MONUMENTS SHALL BE PROTECTED IN PLACE. REALIGN FENCE AROUND MONUMENT TO CLEAR CONCRETE MONUMENT FOOTING (3 FEET OFFSET NOT REQUIRED).
15. THE CONTRACTOR SHALL NOT HAVE CONTACT WITH PRIVATE PROPERTY OWNERS WITHOUT SPECIFIC APPROVAL FROM USACE & CBP. THE CONTRACTOR SHALL COORDINATE WITH PRIVATE LANDOWNERS TO MAINTAIN ACCESS TO PRIVATE PROPERTY DURING CONSTRUCTION. RIGHT OF ENTRY WILL BE PROVIDED AT CONTRACT AWARD.
16. CONTRACTOR MAXIMUM SPEED THROUGH THE CONSTRUCTION FOR BORDER PATROL MUST ALWAYS BE ALLOWED.
17. UNOBSTRUCTED ACCESS THROUGH THE CONSTRUCTION FOR BORDER PATROL MUST ALWAYS BE ALLOWED.
18. CONTRACTOR SHALL HIRE A PROFESSIONAL GEOTECHNICAL ENGINEER TO PROVIDE INSPECTION OF EXCAVATIONS AND SOIL/GROUNDWATER CONDITIONS THROUGHOUT CONSTRUCTION. THE GEOTECHNICAL ENGINEER IS RESPONSIBLE FOR PERFORMING PRE-CONSTRUCTION AND PERIODIC SITE VISITS THROUGHOUT CONSTRUCTION TO ASSESS THE SITE CONDITIONS. ALL COMMUNICATION WITH THE CONTRACTOR WILL BE COORDINATED WITH AND THROUGH THE CONTRACTING OFFICER OR COR TO CHANGE OR CLARIFY THE CONTRACT DOCUMENTS. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE 24-HOUR ADVANCE NOTICE TO THE COR AS WELL AS A WRITTEN SUMMARY REPORT TO COR, WITH REGARD TO ANY SITE VISIT THAT IS COMPLETED BY THE CONTRACTOR'S GEOTECHNICAL ENGINEER.
19. ALL UTILITIES LOCATIONS ARE APPROXIMATE AND TO BE VERIFIED BY THE CONTRACTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY AND LOCATE ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES PRIOR TO THE START OF DESIGN CONSTRUCTION.
20. CONTRACTOR SHALL MAINTAIN ALL BARBED WIRE FENCES STANDING AT ALL TIMES AND SHALL REPAIR OR REPLACE IF DAMAGED AT CONTRACTOR'S EXPENSE. CONTRACTOR SHALL CLOSE ALL OPEN AREAS WHERE FENCE IS REMOVED WITH BARBED WIRE TO PREVENT CATTLE CROSSING ON THE BORDER. CONTRACTOR SHALL GUARANTEE THAT NO CATTLE WILL CROSS INTO THE US DURING CONSTRUCTION.
21. ALL BORDER MONUMENTS SHALL BE PROTECTED IN PLACE.
22. DESIGN LOADS
    - WIND LOAD:
    - BASIC WIND SPEED 116 MPH
    - EXPOSURE C

    EARTHQUAKE DESIGN DATA
    - SPECTRAL RESPONSE ACCELERATION. Ss 0.044
    - SPECTRAL RESPONSE ACCELERATION. S1 0.013
    - SITE CLASS D
    - SPECTRAL RESPONSE ACCELERATION. SDS 0.044
    - SPECTRAL RESPONSE COEFFICIENT. SD1 0.023
    - SEISMIC DESIGN CATEGORY. SD1 A
23. THE CONTRACTOR'S TRAFFIC CONTROL PLAN SHALL CONFORM TO THE MORE STRINGENT REQUIREMENT(S) OF TXDOT AND EM385-1-1 REQUIREMENTS.

## DEMOLITION AND STRUCTURAL STEEL REMOVAL:

1. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL ITEMS CALLED FOR IN THE PLANS AT AN APPROVED OFF-SITE LOCATION.
2. SEE SECTION 02 41 00 DEMOLITION FOR ADDITIONAL INFORMATION.
3. AT SEVERAL LOCATIONS, ITEMS, SUCH AS BUT NOT LIMITED TO TRAFFIC SIGNS AND MEMORIAL ITEMS, ARE ATTACHED TO THE EXISTING FENCING. IF SUCH ITEMS ARE NOT REMOVED BY LOCAL AUTHORITIES PRIOR TO FENCE DEMOLITION CONTRACTOR SHALL REMOVE SUCH ITEMS AND TURN THEM OVER TO THE COR.
4. AT ALL WASHES, WASH NUMBER SIGNS THAT ARE WELDED TO EXISTING FENCING SHALL BE REMOVED AND TURNED OVER TO COR TO GIVE BORDER PATROL. CONTRACTOR SHALL COORDINATE THROUGH COR WITH BORDER PATROL TO PLACE BACK ONTO NEW FENCE.

## CLEARING AND GRUBBING:

1. PRIOR TO GENERAL SITE GRADING, AREAS TO RECEIVE NEW STRUCTURES SHALL BE STRIPPED OF ANY EXISTING STRUCTURES AND VEGETATION.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR TRIMMING AND REMOVAL OF TREE OBSTRUCTING FENCE REPLACEMENT. FOR TREES ROOTED IN MEXICO THAT REQUIRE TRIMMING, CONTRACTOR SHALL COORDINATE WITH THE COR PRIOR TO CONDUCTING WORK.
3. WASTE MATERIALS INCLUDING VEGETATION, ROOTS, CONCRETE, SLURRY AND DEBRIS SHALL BE DISPOSED OF OFF-SITE BY CONTRACTOR.

## EXISTING UTILITIES:

1. LOCATIONS OF UNDERGROUND UTILITIES ARE FROM BEST INFORMATION AVAILABLE AT THE TIME THESE PLANS WERE PREPARED. THE GOVERNMENT DOES NOT WARRANT THE ACCURACY OF THE INFORMATION AVAILABLE AT THE TIME THESE PLANS WERE PREPARED. THE GOVERNMENT DOES NOT WARRANT THE ACCURACY OF THE INFORMATION PROVIDED. ANY DEVIATION SHALL BE CALLED TO THE ATTENTION OF THE COR PRIOR TO PROCEEDING WITH WORK IN THE AREA OF FOUND UTILITIES.
2. APPROXIMATE LOCATIONS OF KNOWN EXISTING UTILITIES ARE SHOWN. CONTRACTOR SHALL DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATIONS IN THE FIELD PRIOR TO COMMENCING WORK. CONTRACTOR TO BE FULLY RESPONSIBLE FOR DAMAGES WHICH MIGHT OCCUR BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE EXISTING UTILITIES AND /OR STRUCTURES.
3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO HAVE ALL UTILITIES LOCATED AND MARKED PRIOR TO THE START OF CONSTRUCTION. ANY FOUND UTILITIES NOT STATED ABOVE SHALL BE BROUGHT TO THE ATTENTION OF THE COR FOR DIRECTION. PRIOR TO PROCEEDING WITH CONSTRUCTION IN THE AREA OF SAID UTILITIES.
4. PUBLIC AND PRIVATE UTILITY LINES AND CUSTOMER SERVICE LINES MAY EXIST THAT ARE NOT SHOWN ON THE CONSTRUCTION DRAWINGS. IT SHALL BE CONTRACTOR'S RESPONSIBILITY TO LOCATE, MAINTAIN AND PROTECT THE INTEGRITY OF THESE LINES. HAND EXCAVATION MAY BE REQUIRED.
5. CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANY TO RELOCATE OR DIVERT ANY UTILITY IN CONFLICT WITH PROPOSED CONSTRUCTION SO AS NOT TO DISRUPT SERVICE OF IT. CONTRACTOR SHALL RESTORE, RELOCATED OR DIVERT UTILITY TO ITS ORIGINAL CONDITION AND LOCATION WHEN APPLICABLE UPON COMPLETION OF CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ALL UTILITY ADJUSTMENTS AND ACQUIRE ALL REQUIRED PERMITS FOR RELOCATION.
6. THE VERIFIED LOCATIONS OF ALL UTILITIES SHALL BE DEPICTED ON THE WORKING RECORD DRAWINGS AND FINAL AS-BUILT DRAWINGS.
7. CONTACT FREDDY GUERRA, ASSITANT CITY MANAGER, (956) 849-1411 FOR UTILITY LOCATES WITHIN THE LIMITS OF CONSTRUCTION.

## DRAINAGE:

6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE DRAINAGE AT ALL TIMES DURING CONSTRUCTION OF PROPOSED FACILITIES.
7. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES DURING THE INSTALLATION OF THE STRUCTURES AND DRAINAGE IMPROVEMENTS.

## SWPPP:

1. IMPLEMENT SWPPP AS REQUIRED BY TCEQ REQUIREMENTS AND PROJECT SPECIFICATIONS PRIOR TO CONSTRUCTION IMPLEMENT BEST MANAGEMENT PRACTICES (BMPS) DESCRIBED IN THE SWPPP TO REDUCE EROSION. SEE SECTION 01 57 19 ENVIRONMENTAL CONTROLS.
2. THE CONTRACTOR SHALL ENSURE THAT BMPS ARE IN PLACE PRIOR TO AND DURING CONSTRUCTION OF THE FENCE. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT EROSION AND SEDIMENT CONTROL MEASURES COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS.
3. THE CONTRACTOR SHALL PROVIDE ONE SWPPP REPORT AND PLANS FOR CONSTRUCTION OF THE BASE BID AND OPTION ITEMS PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN A NOTICE OF INTENT AND COMPLETE THE NOTICE OF ENDING UPON COMPLETION.
4. THE COR RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO MODIFY OR REVISE THE SWPPP TO ENSURE THAT ALL CURRENT MEASURES TO PREVENT OFF-SITE MIGRATION OF POLLUTANTS, INCLUDING SOILS, ARE INCLUDED IN THE SWPPP. IF SWPPP DOES NOT ADEQUATELY ADDRESS APPLICABLE BMPS OR IF THE CONTRACTING OFFICER DETERMINES THAT THE STORM WATER POLLUTION PREVENTION REQUIREMENTS ARE NOT BEING MET.

## TUNNELS:

1. IN THE EVENT THAT AN UNDERGROUND TUNNEL OR VOID IS DISCOVERED DURING EXCAVATION, THE DESIGN - BUILD CONTRACTOR SHALL IMMEDIATELY CONTACT THE COR AND BORDER PATROL. THE DESIGN - BUILD CONTRACTOR SHALL INCLUDE THE LOCATION(S ) AND DIMENSIONS OF ANY TUNNELS DISCOVERED ON BOTH THE WORKING RECORD DRAWINGS AND FINAL AS-BUILT DRAWINGS.
2. THE LOCATIONS OF ALL TUNNELS DISCOVERED SHALL BE DEPICTED ON THE WORKING RECORD DRAWINGS AND FINAL AS-BUILT DRAWINGS.

## SEDIMENT CONTROL:

1. CONTRACTOR SHALL PROVIDE AND MAINTAIN SEDIMENT CONTROL SERVICES IN ACCORDANCE WITH THE CONTRACT DOCUMENT THROUGH THE TERM OF THE WORK COVERED BY HIS CONTRACT. SEE SECTION 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS.

## ON-SITE FILL:

1. SOIL EXCAVATED FROM THE PROJECT SITE SHALL BE CONSIDERED ON -SITE FILL.
2. ON-SITE FILL REQUIRED TO BRING THE SITE TO GRADE SHALL BE FREE OF VEGETATION AND DEBRIS, AND CONTAIN NO ROCKS OR LUMPS LARGER THAN 3 INCH NOMINAL DIAMETER.
3. EXCAVATED ON-SITE SOILS MEETINGS THE REQUIREMENTS FOR ENGINEERED FILL MAY BE REUSED AS ENGINEERED FILL.
4. EXCAVATED ON-SITE SOILS NOT MEETING THE REQUIREMENTS FOR ENGINEERED FILL MAY BE REUSED FOR FILL WITHIN THE ENFORCEMENT ZONE TO ADJUST GRADE PROVIDED IT DOES NOT CONTAIN ROOTS, ORGANICS, TRASH, DELETERIOUS, UNSUITABLE OR UNSATISFACTORY MATERIAL AS DEFINED BY USIBWC LEVEE CONSTRUCTION GUIDELINES, AND SECTION 31 00 00 EARTHWORK PLAN SPECIFICATIONS, INCLUDING COHESIONLESS MATERIAL (SP SW SM SC GM GP GW)
5. EXCAVATED ON-SITE SOILS NOT MEETING THE REQUIREMENTS FOR ENGINEERED FILL MAY BE MODIFIED / CONDITIONED EITHER THROUGH LIME STABILIZATION OR BLENDING TO MEET THE REQUIREMENTS FOR ENGINEERED FILL AND USED WITHIN THE PROJECT SITE PROVIDED IT DOES NOT CONTAIN ROOTS, ORGANICS, DELETERIOUS OR UNSATISFACTORY MATERIALS AS DEFINED BY USIBWC LEVEE CONSTRUCTION GUIDELINES AND SECTION 31 00 00 EARTHWORK PLAN SPECIFICATIONS. ITS IS ESTIMATED 4% HYDRATED LIME WILL BE REQUIRED TO RAISE THE PH AND CONDITION ON-SITE-HIGH PLASTICITY CLAYS. TESTING WILL BE REQUIRED DURING CONSTRUCTION TO VALIDATE THE ESTIMATE. THE CONTRACTOR SHOULD BE AWARE THAT SOIL PROPERTIES VARY WITHIN THE PROJECT SITE, AND THE QUANTITY OF LIME ESTIMATED TO CONDITION THE ON-SITE SOILS MAY CHANGE.
6. EXISTING CALICHES /AGGREGATE SURFACE COURSE EXCAVATED FROM THE EXISTING ROAD MAY NOT BE REUSED AS AGGREGATE SURFACE COURSE FOR THE NEW PATROL ROAD OR CREST ROAD. EXISTING CALICHE/AGGREGATE SURFACE COURSE MAY BE REUSED AS FILL WITHIN THE ENFORCEMENT ZONE,OR USED AS SUBBASE MATERIAL WITHIN THE PATROL ROAD TO REDUCE THE AGGREGATE SURFACE MATERIAL WITHIN THE PATROL ROAD TO REDUCE THE AGGREGATE SURFACE COURSE REQUIREMENTS. SEE ALL WEATHER ROAD (SEE CIVIL NARRITIVE), PROVIDED IT DOES NOT CONTAIN ROOTS, ORGANICS, DELETERIOUS OR UNSATISFACTORY MATERIAL AS DEFINED BY USIBWC LEVEE CONSTRUCTION GUIDELINES, AND SECTION 31 00 00 EARTHWORK PLAN SPECIFICATIONS.
7. NO ON-SITE FILL SHALL BE PLACED ON OR AGAINST CONCRETE LESS THAN 7 DAYS AFTER PLACEMENT OR 70 PERCENT OF THE DESIGN STRENGTH WITHOUT PRIOR APPROVAL OF THE CONTRACTING OFFICER. CRAWLER-TYPE TRACTORS,VIBRATORY EQUIPMENT AND OTHER SIMILAR COMPACTION EQUIPMENT SHALL NOT BE USED WITHIN 4 FEET OF ANY COMPLETED OR PARTIALLY COMPLETED STRUCTURE. COMPACTION WITHIN 4 FEET OF COMPLETED OR PARTIALLY COMPLETED STRUCTURES SHALL BE ACCOMPLISHED BY THE USE OF MECHANICAL HAND TAMPERS, VIBRATING PLATES, OR OTHER APPROVED METHODS AND EQUIPMENT. FILL MATERIAL SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY WITHIN ±3% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D 698. CONTRACTOR WILL ENSURE THAT COMPACTION OPERATIONS DO NOT DAMAGE ANY EXISTING UTILITIES OR STRUCTURE. ANY DAMAGE CAUSED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE..
8. FILL PLACED ON ENGINEERED FILL OR NATURAL SLOPES STEEPER THAN 5H:1V SHALL BE KEYED AND BENCHED INTO EXISTING SLOPE. THE BENCHES SHALL BE WIDE ENOUGH TO ACCOMMODATE THE COMPACTION EQUIPMENT AND THE LOWEST BENCH SHALL BE THE WIDEST AT A MINIMUM OF 8 TO 10 FEET WIDE. BENCH HEIGHTS SHALL BE A MAXIMUM OF 3 FEET. BENCH WIDTHS AT THE TOP SHALL BE A MINIMUM OF 4 FEET.

## EGRESS/INGRESS ROAD AND STAGING AREAS:

1. THE CONTRACTOR MAY USE THE PUBLIC ROADS SHOWN ON THE LOCATION MAP IN THE PLANS FOR INGRESS / EGRESS TO THE PROJECT SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE AT THESE LOCATIONS DUE TO CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROCURING AND MAINTAINING THE STAGING AREA.
3. SAFE ACCESS THROUGH WORK SITE SHALL BE MAINTAINED AT ALL TIMES. MATERIAL AND EQUIPMENT SHALL NOT BE STAGED SUCH AS TO LIMIT ACCESS THROUGH THE CONSTRUCTION SITE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROCURING AND MAINTAINING THE STOCKPILE AREA. STOCKPILE AREA WILL BE LOCKED OUTSIDE THE FLOOD PLAIN.
5. THE CONTRACTOR SHALL NOT HAVE CONTACT WITH PRIVATE PROPERTY OWNERS FOR EGRESS/INGRESS ACCESS WITHOUT SPECIFIC APPROVAL FROM USACE AND CBP.

## EXCAVATION:

1. ALL EXCAVATED MATERIAL IS TO BE REMOVED FROM THE PROJECT PERMANENT EASEMENTS AND STAGING AREAS AND DISPOSES OF AT AN APPROVED DISPOSAL LOCATION. UNLESS OTHERWISE NOTED OR APPROVED FOR USE AS BACK FILL MATERIAL. EXCAVATED MATERIAL SHALL NOT BE STORED IN THE RIVER FLOOD PLAIN.
2. TRUCKS SHALL BE LOADED IN A MANNER SO AS TO AVOID LOSS OF LOADED MATERIAL OR ANY PORTION THEREOF DURING TRANSPORT IN ACCORDANCE WITH STATE LAW.
3. THE CONTRACTOR SHALL, AT HIS/HER OWN EXPENSE, REPAIR ANY HAUL ROAD SURFACE IRREGULARITIES CAUSES BY LOADING OR HAULING OPERATIONS.
4. ALL TEMPORARY EXCAVATIONS MUST COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL SAFETY REGULATION.

## PREPARED SUBGRADE:

1. DUE TO THE VARIABILITY OF SITE SOILS, ISOLATED AREAS OF THE SUBGRADE MAY REQUIRE OVER-EXCAVATION AND RECOMPACTION TO MITIGATE LOOSE OR DISTURBED SOIL CONDITIONS. SUBGRADE FOR THE ENTIRE BORDER ROAD SHALL BE PROOF ROLLED IN ACCORDANCE WITH SECTION 31 00 00 EARTHWORK, SUBSECTION 3.12.1 PROOF ROLLING. ANY AREAS OBSERVED TO DEFLECT UNDER THE PRESSURE EXERTED BY THE PROOF ROLLING OPERATIONS WILL REQUIRE OVER-EXCAVATION AND REPLACEMENT WITH ENGINEERED FILL.
2. FOR CUT AREAS, CUT PROPOSED ROAD TO GRADE, SCARIFY TOP 8 INCHES OF SUBGRADE AND MOISTURE CONDITION. FOR FILL AREAS, SCARIFY TOP 6 INCHES OF EXISTING GRADE AND MOISTURE AND CONDITION.
3. COMPACT SUBGRADE FOR CUTTING AREAS TO 95% OF ASTM D1557 AT ±2% OF OPTIMUM MOISTURE CONTENT. FILL MATERIAL SHALL BE TESTED IN 8-INCH LOOSE/ COMPACTED TO 6 INCHES UNDER ROADWAYS AND 12-INCH LOOSE/COMPACTED TO 8-INCHES IN OTHER FILL LOCATIONS AND SHALL CARRY SIMILAR SOIL PROPERTIES AS SHOWN ON BORING LOGS. COMPACTION OF FILL MATERIAL IN SUBGRADE SHALL BE TO 95% OF ASTM D1557 AT ±2% OF OPTIMUM MOISTURE CONTENT.
4. SITE GRADING PERFORMED DURING OR SUBSEQUENT TO WET WEATHER MAY RESULT IN NEAR-SURFACE SITE SOILS WITH MOISTURE CONTENTS SIGNIFICANTLY ABOVE OPTIMUM. THIS CONDITION COULD HAMPER EQUIPMENT MANEUVERABILITY AND EFFORTS TO COMPACT SITE SOILS TO THE RECOMMENDED COMPACTION CRITERIA. DURING MOST OF THE YEAR, THE SITE WILL TYPICALLY DRY TO WORKABLE MOISTURE CONTENTS WITHIN 1 TO 2 DAYS. IF TIME IS CRITICAL FACTOR. DISKING FOR AERATION, CHEMICAL TREATMENT, REPLACEMENT WITH DRIER MATERIAL, STABILIZATION WITH GEOTEXTILE FABRIC OR OTHER METHODS MAY BE IMPLEMENTED TO REDUCE EXCESSIVE SOIL MOISTURE AND FACILITATE EARTHWORK OPERATIONS. THIS WILL BE DONE AT NO ADDITIONAL COST TO THE GOVERNMENT. ALL COMMUNICATION WITH CONTRACTOR SHALL BE COORDINATED WITH AND THROUGH THE COR TO CHANGE OR CLARIFY THE CONTRACT DOCUMENTS. ANY FIELD DIRECTIVES WILL BE COORDINATED WITH AND ISSUED BY THE COR.

## FOUNDATIONS:

1. FOUNDATIONS SHALL BE CAST ON PROPERLY COMPACTED SOIL. NATIVE SOILS SHALL BE COMPACTED TO AT LEAST 95% TO THE MAXIMUM DRY DENSITY AT ±2% OF OPTIMUM MOISTURE (ASTM D1557).
2. WHERE NATIVE SOILS ARE LOOSE, SATURATED OR UNSTABLE AND DO NOT MEET THE ALLOWABLE BEARING CAPACITY, NATIVE SOILS SHALL BE OVER-EXCAVATED BELOW THE BOTTOM OF THE FOOTING ELEVATION TO SOIL ELEVATION MEETING THE DESIGN PARAMETERS. THE OVER-EXCAVATED AREAS SHALL BE BACK FILLED AND COMPACTED USING ENGINEERED FILL. SEE SECTION 31 00 00 EARTHWORK FOR ADDITIONAL INFORMATION. SOIL CONDITIONS WILL VARY AND HENCE COMPACTION MUST RELATE TO THE TYPE OF MATERIAL.
3. CONTRACTOR SHALL BE PREPARED TO SHORE AND FORM TRENCH FOOTING WHERE LOOSE SOILS ARE ENCOUNTERED.
4. FOUNDATION DETAILS FOR BOLLARDS NEED TO BE SUBMITTED (AFTER A GEOTECHNICAL STUDY IS COMPLETED). FOUNDATION DETAILS MAY VARY FROM ONE LOCATION TO ANOTHER DEPENDING UPON SOIL TYPE.
5. CONTRACTOR SHALL DEVELOP TRENCH DEWATERING PLANS WHERE NECESSARY PRIOR TO FOUNDATION PLACEMENT.

## CAST-IN PLACE CONCRETE:

1. ALL CONCRETE STRENGTH SHALL CONFORM TO SECTION 03 30 00 CAST-IN- PLACE CONCRETE. SEE SECTION 03 30 00 CAST-IN -PLACE CONCRETE FOR ADDITIONAL INFORMATION.
2. CONCRETE WORK TO BE COVERED IN ACCORDANCE WITH "THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" ACI 318.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS FOR SIZE AND LOCATION OF EMBEDDED ITEMS AND SLEEVES REQUIRED. THESE ITEMS SHALL BE FURNISHED AND INSTALLED PRIOR TO PLACEMENT OF CONCRETE.
4. ALL MIXING, HANDLING AND TRANSPORTING, PLACING AND CURING OF CONCRETE SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE AMERICAN CONCRETE INSTITUTE.
5. THE ONLY PERSONS AUTHORIZED TO ADD WATER TO THE CONCRETE TRUCK AT THE JOB SITE ARE THE QC TESTING REPRESENTATIVE. IF APPROVED, THE QC TESTING REPRESENTATIVE IS REQUIRED TO NOTIFY THE COR AND QA TESTING REPRESENTATIVE.
6. ALL EXPOSED EDGES SHALL BE CAST WITH $\frac{3}{4}$ INCH CHAMFERS UNO.

## REINFORCING STEEL:

1. REINFORCING STEEL SHALL CONFORM TO SECTION 03 20 00.00 10 CONCRETE REINFORCING. NO TACK WELDING OF REINFORCING SHALL BE PERMITTED. PLACEMENT AND DETAILING OF CONCRETE REINFORCEMENT AND ACCESSORIES SHALL BE IN ACCORDANCE WITH ACI 318 AND ACI SP-66, RESPECTIVELY (LATEST ADDITIONS).
2. REBAR SHALL HAVE A MINIMUM COVER OF 3 INCHES UNLESS OTHERWISE NOTED.
3. HORIZONTAL AND VERTICAL REINFORCING STEEL SHALL BE CONTINUOUS ACROSS CONSTRUCTION JOINTS.
4. CONSTRUCTION JOINTS NOT INDICATED ON THE DRAWINGS SHALL BE MADE AND LOCATED AS NOT TO IMPAIR SIGNIFICANTLY THE STRENGTH OF THE STRUCTURE. CONTRACTORS SHALL SUBMIT LOCATION OF PROPOSED JOINTS IN THE SLABS AND WALLS TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

## STRUCTURAL STEEL:

1. STRUCTURAL STEEL SHALL BE PROCURED BY THE CONTRACTOR IN ACCORDANCE WITH SECTION 05 12 00 STRUCTURAL STEEL.
2. STRUCTURAL STEEL SHALL CONFORM TO SECTION 05 12 00 STRUCTURAL STEEL. SEE SECTION 05 12 00 STRUCTURAL STEEL FOR ADDITIONAL INFORMATION.
3. WELDED CONNECTIONS FOR STRUCTURAL STEEL SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.4.
4. STRUCTURAL STEEL SHALL CONFORM TO THE AISC "SPECIFICATIONS FOR DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDING", LATEST EDITION.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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CHECKED BY: X
SUBMITTED BY: X
ISSUED DATE:
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
1721B PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

GENERAL NOTES

SHEET ID
ROMA
G-003

D2 KEYPLAN
SCALE: 1" = 300'-0"

0 50 100 1' = 300' - 0"




A1 KEYPLAN
SCALE: 1" = 300'-0"

0 50 100 1' = 300' - 0"

US Army Corps of Engineers ®

| DATE | DESCRIPTION | MARK |
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US ARMY CORPS OF ENGINEERS
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ETEGRA
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DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

KEYPLAN
STA. 10+00.00 - 184+00.00

SHEET ID
ROMA
G-004

D2 KEYPLAN
SCALE: 1" = 300'-0"

0 50 100 1" = 300' - 0"




A1 KEYPLAN
SCALE: 1" = 300'-0"

0 50 100 1" = 300' - 0"

US Army Corps of Engineers ®

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ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

KEYPLAN
STA. 184+00.00 - 299+30.00

SHEET ID
ROMA
G-005

| No. | Description | Station | Latitude | Longtitude |
|---|---|---|---|---|
| 1 | OPTION WEST BEGIN | 10+00.00' | N26° 24' 53.28" | W99° 01' 54.16" |
| 2 | PI | 14+01.40' | N26° 24' 53.28" | W99° 01' 49.75" |
| 3 | PI | 33+06.93' | N26° 24' 41.93" | W99° 01' 33.01" |
| 4 | PI | 35+19.63' | N26° 24' 40.66" | W99° 01' 31.14" |
| 5 | OPTION WEST END/ BESE BEGIN | 38+24.09' | N26° 24' 38.82" | W99° 01' 28.48" |
| 6 | PI | 44+05.75' | N26° 24' 35.40" | W99° 01' 23.34" |
| 7 | PI | 44+56.48' | N26° 24' 35.10" | W99° 01' 22.89" |
| 8 | PI | 49+72.32' | N26° 24' 32.08" | W99° 01' 18.32" |
| 9 | PI | 50+67.55' | N26° 24' 31.39" | W99° 01' 17.60" |
| 10 | PI | 54+43.56' | N26° 24' 28.06" | W99° 01' 15.75" |
| 11 | PI | 59+96.65' | N26° 24' 23.48" | W99° 01' 12.41" |
| 12 | PI | 61+27.45' | N26° 24' 22.33" | W99° 01' 11.75" |
| 13 | PI | 61+52.17' | N26° 24' 22.11" | W99° 01' 11.63" |
| 14 | PI | 63+61.27' | N26° 24' 20.24" | W99° 01' 10.64" |
| 15 | PI | 65+81.51' | N26° 24' 18.26" | W99° 01' 09.62" |
| 16 | PI | 70+18.88' | N26° 24' 15.69" | W99° 01' 05.75" |
| 17 | PI | 70+94.25' | N26° 24' 16.08" | W99° 01' 05.04" |
| 18 | PI | 75+98.99' | N26° 24' 12.62" | W99° 01' 01.04" |
| 19 | PI | 78+22.83' | N26° 24' 10.66" | W99° 00' 59.88" |
| 20 | PI | 80+68.38' | N26° 24' 08.23" | W99° 00' 59.98" |
| 21 | PI | 83+81.59' | N26° 24' 05.32" | W99° 00' 58.79" |
| 22 | PI | 84+72.27' | N26° 24' 04.49" | W99° 00' 58.40" |
| 23 | PI | 84+90.87' | N26° 24' 04.33" | W99° 00' 58.31" |
| 24 | PI | 93+58.20' | N26° 23' 56.96" | W99° 00' 53.40" |
| 25 | PI | 95+84.96' | N26° 23' 55.25" | W99° 00' 51.78" |
| 26 | PI | 97+69.14' | N26° 23' 53.70" | W99° 00' 50.73" |
| 27 | PI | 101+30.20' | N26° 23' 51.13" | W99° 00' 47.96" |
| 28 | PI | 105+04.74' | N26° 23' 48.23" | W99° 00' 45.40" |
| 29 | PI | 127+28.57' | N26° 23' 43.84" | W99° 00' 21.43" |
| 30 | PI | 141+55.49' | N26° 23' 41.81" | W99° 00' 05.90" |
| 31 | PI | 145+49.57' | N26° 23' 40.39" | W99° 00' 01.87" |
| 32 | PI | 152+03.21' | N26° 23' 41.01" | W98° 59' 54.71" |
| 33 | PI | 157+96.16' | N26° 23' 43.52" | W98° 59' 48.82" |
| 34 | PI | 161+19.89' | N26° 23' 44.90" | W98° 59' 45.60" |
| 35 | PI | 165+78.32' | N26° 23' 46.35" | W98° 59' 40.82" |
| 36 | PI | 175+17.35' | N26° 23' 48.39" | W98° 59' 30.75" |
| 37 | PI | 193+66.52' | N26° 23' 53.42" | W98° 59' 11.19" |
| 38 | PI | 205+97.57' | N26° 23' 58.42" | W98° 58' 58.84" |
| 39 | BASE END/ OPTION EAST BEGIN | 231+33.44' | N26° 24' 06.80" | W98° 58' 32.56" |
| 40 | PI | 237+05.48' | N26° 24' 11.14" | W98° 58' 28.51" |
| 41 | PI | 238+93.43' | N26° 24' 11.98" | W98° 58' 26.66" |
| 42 | PI | 242+36.93' | N26° 24' 13.44" | W98° 58' 23.25" |
| 43 | PI | 245+34.19' | N26° 24' 14.55" | W98° 58' 20.22" |
| 44 | PI | 246+48.29' | N26° 24' 14.88" | W98° 58' 19.02" |
| 45 | PI | 247+81.81' | N26° 24' 15.39" | W98° 58' 17.67" |
| 46 | PI | 250+26.56' | N26° 24' 16.17" | W98° 58' 15.12" |
| 47 | PI | 258+44.63' | N26° 24' 15.87" | W98° 58' 06.12" |
| 48 | PI | 259+30.74' | N26° 24' 15.82" | W98° 58' 05.18" |
| 49 | PI | 263+78.07' | N26° 24' 19.75" | W98° 58' 02.92" |
| 50 | PI | 267+46.33' | N26° 24' 22.65" | W98° 58' 00.45" |
| 51 | PI | 276+13.45' | N26° 24' 26.64" | W98° 57' 52.01" |
| 52 | PI | 280+63.85' | N26° 24' 27.52" | W98° 57' 47.15" |
| 53 | PI | 288+62.75' | N26° 24' 29.10" | W98° 57' 38.54" |
| 54 | EAST OPTION END | 297+08.42' | N26° 24' 27.36" | W98° 57' 29.44" |

B1 FENCE POB, EOP AND PI LOCATIONS
SCALE: NTS

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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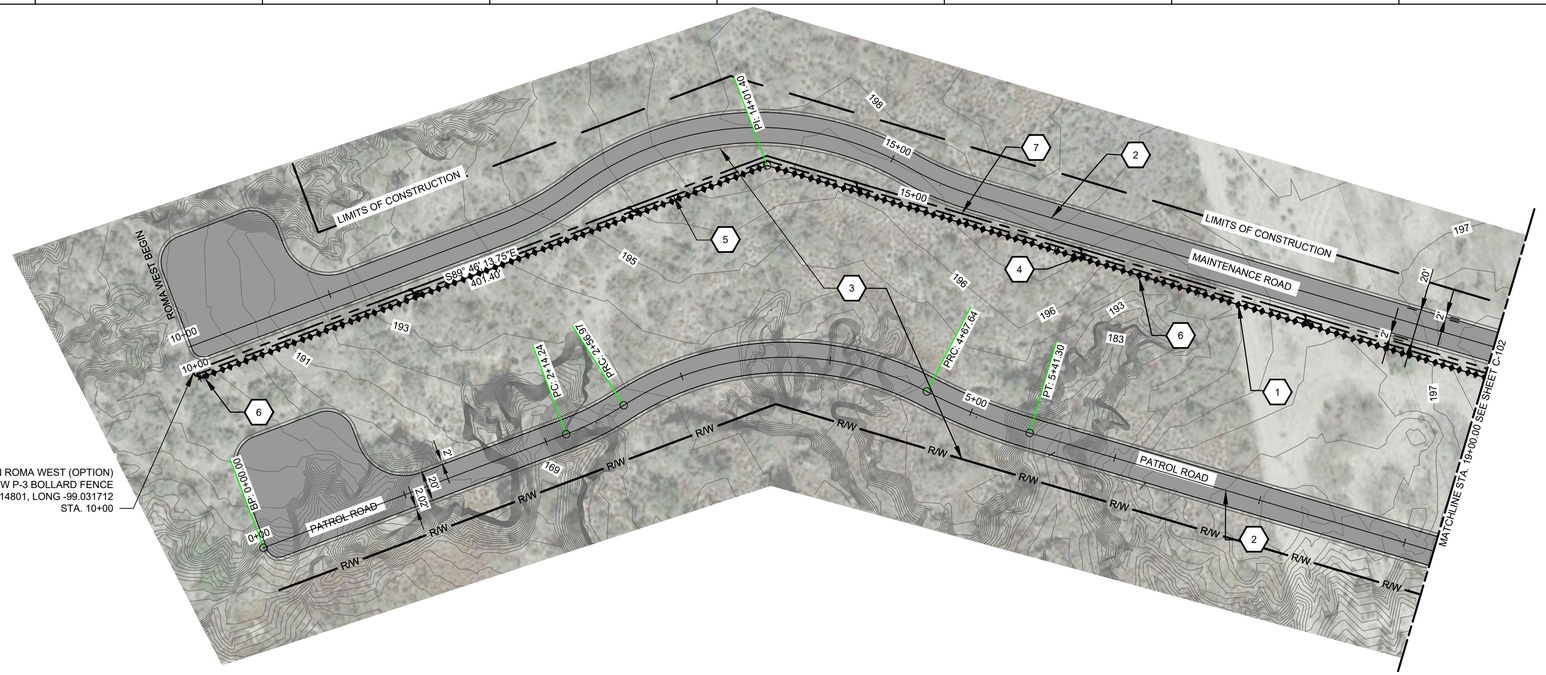
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

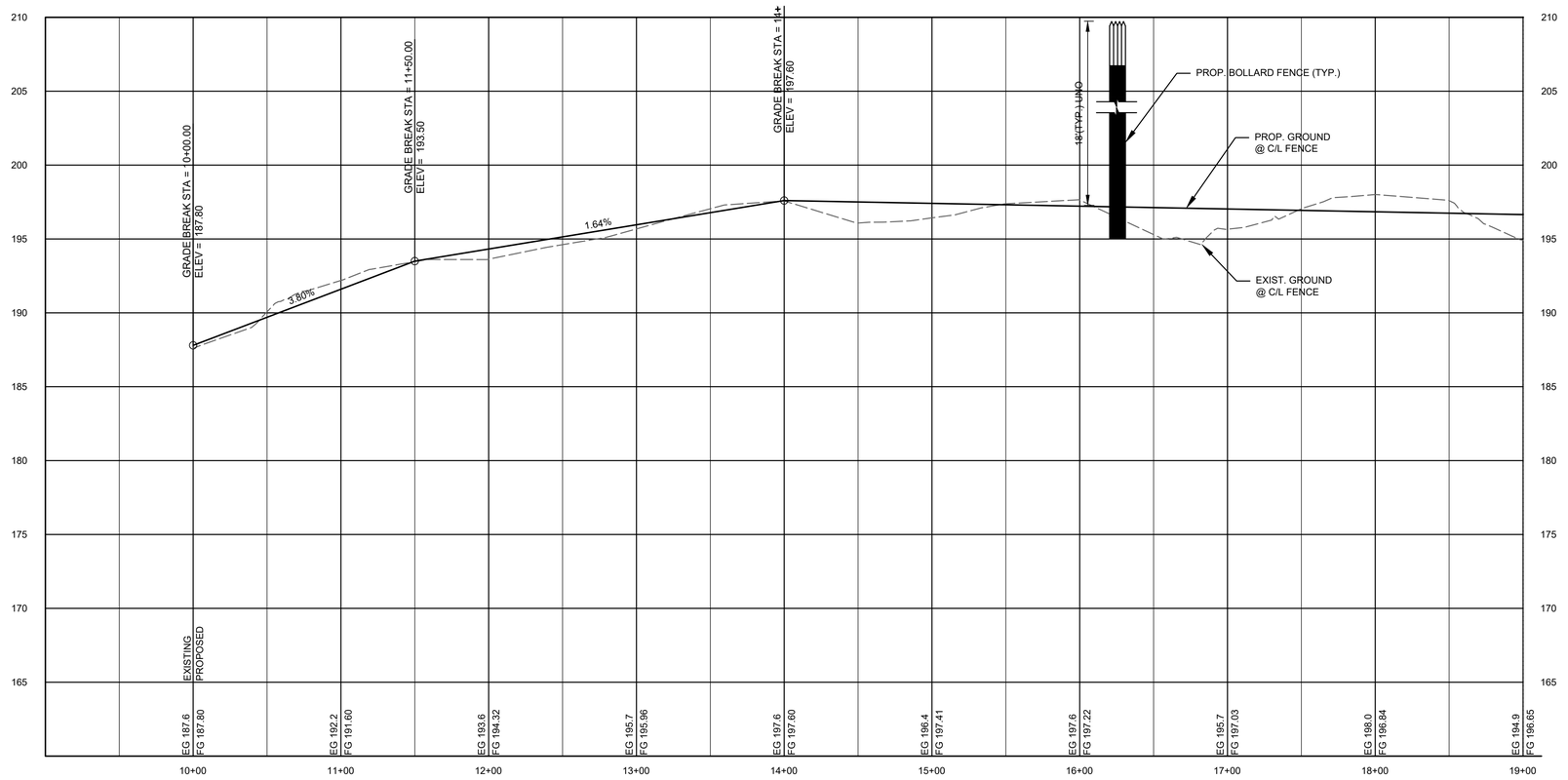
ETEGRA
1718 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

FENCE PI LOCATIONS

SHEET ID
ROMA
G-006




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

1" = 50' - 0"
1" = 5' - 0"

## GENERAL NOTES

1. THIS SHEET IS AT 35% CONCEPT DESIGN AND NOT TO BE USED FOR CONSTRUCTION.
2. CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL GEOTECHNICAL TESTING, TOPOGRAPHIC MAPPING, DESIGN, SURVEY STAKE-OUT, ABOVE AND BELOW GROUND UTILITY IDENTIFICATIONS AND REQUIRED RELOCATIONS, AND REMOVAL AND PROPER DISPOSAL OF STRUCTURES, DEBRIS, ETC. LOCATED WITHIN THE ENFORCEMENT ZONE.
3. CONTRACTOR SHALL ENSURE THAT ALL DESIGNS MEET TACTICAL INFRASTRUCTURE STANDARDS, LATEST EDITION.
4. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES, IRRIGATION CULVERTS AND DRAINAGE STRUCTURES, AND ADJUST/RELOCATE AS REQUIRED TO DE-CONFLICT WITH THE PROPOSED BOLLARD FENCE AND ENFORCEMENT ZONE (I.E.: EX. IRRIGATION VALVES TO BE RELOCATED TO NORTH LEVEE EMBANKMENT).
5. CONTRACTOR SHALL DESIGN AND INSTALL ALL DRAINAGE SYSTEMS FOR THIS PROJECT.
6. LIGHTING LOCATIONS ARE CONCEPTUAL. CONTRACTOR TO PROVIDE FINAL LIGHTING COMPUTATIONS AND LOCATIONS.

## XX KEYNOTES

1. PROPOSED NEW TYPE P-3 BOLLARD FENCE.
2. PROPOSED TYPE FC-2 AGGREGATE ALL-WEATHER ROAD.
3. CLEAR VEGETATION AND GRADE WITHIN ENFORCEMENT ZONE.
4. PROPOSED LIGHT POLE, PULLBOX, AND LIGHTING - SEE ELEC. FOR LOCATIONS. (TYP.)
5. PROPOSED POWER AND LIGHTING DISTRIBUTION CABLE AND CONDUIT/DUCTBANK.
6. PROPOSED FENCE GROUNDING LOCATIONS.
7. PROPOSED COMMUNICATION CONDUIT/ DUCTBANK. (CABLE FUTURE BY OTHERS)
8. GATE ELECTRICAL DISTRIBUTION EQUIPMENT.
9. GATE GROUNDING LOCATIONS.
10. PROPOSED MOTORIZED VEHICLE SLIDE GATE.
11. PROPOSED RVSS SITE.
12. CONCEPTUAL ELECTRICAL UTILITY CONNECTION POINT.
13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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| CONTRACT NO.: | |
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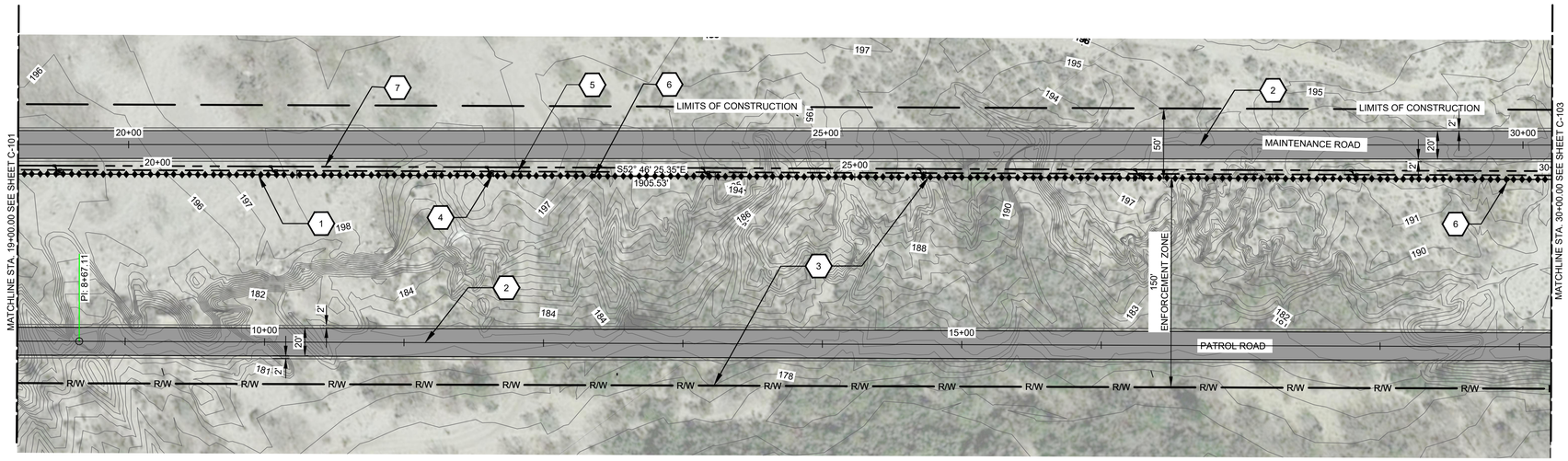
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

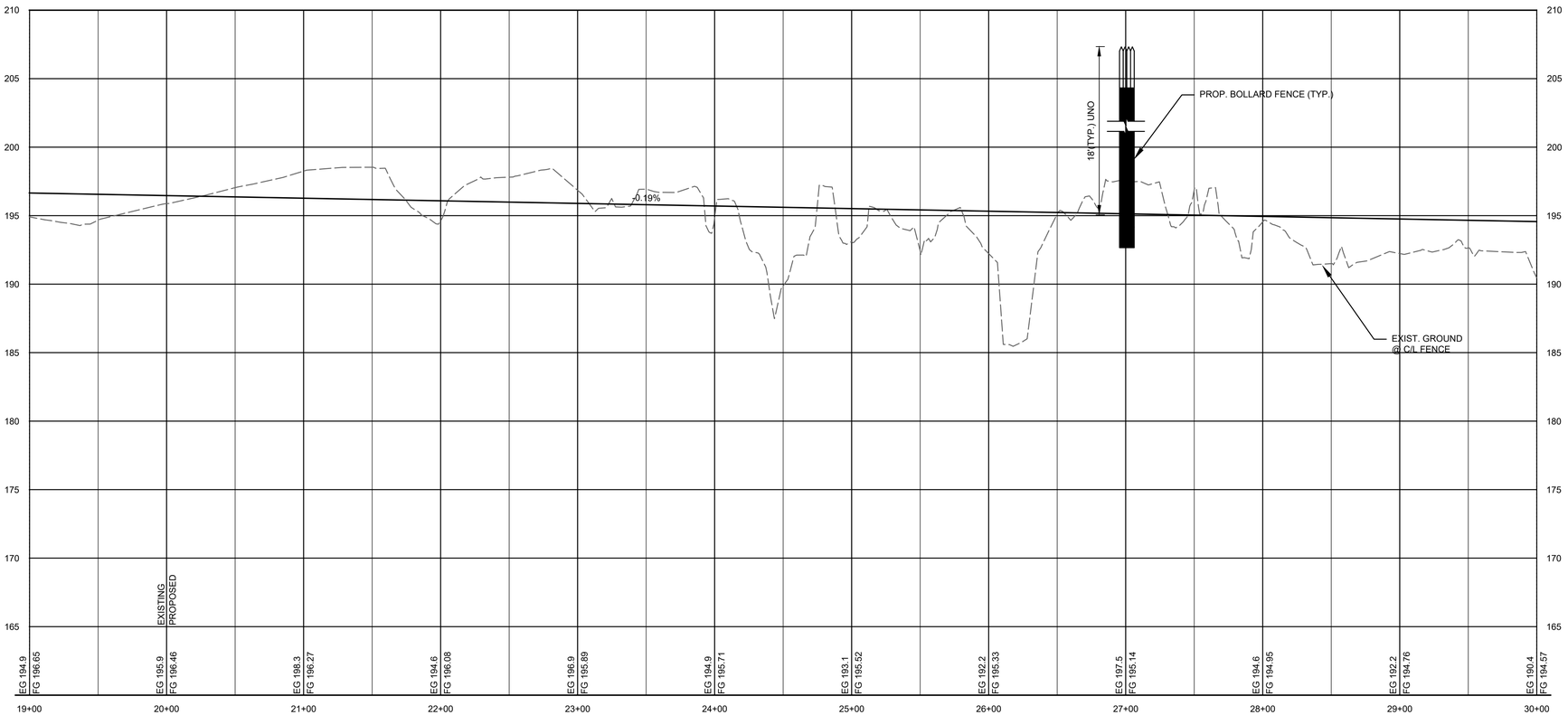
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 10+00.00 - 19+00.00

SHEET ID
ROMA
C-101

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US Army Corps of Engineers ®

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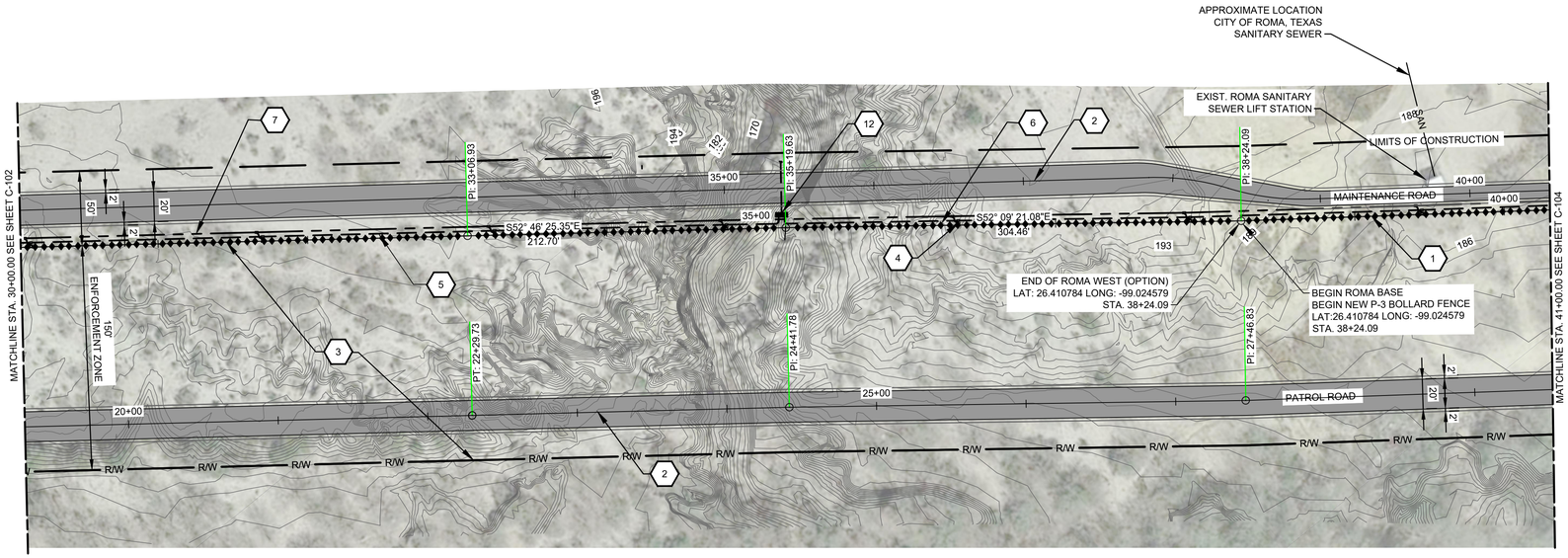
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

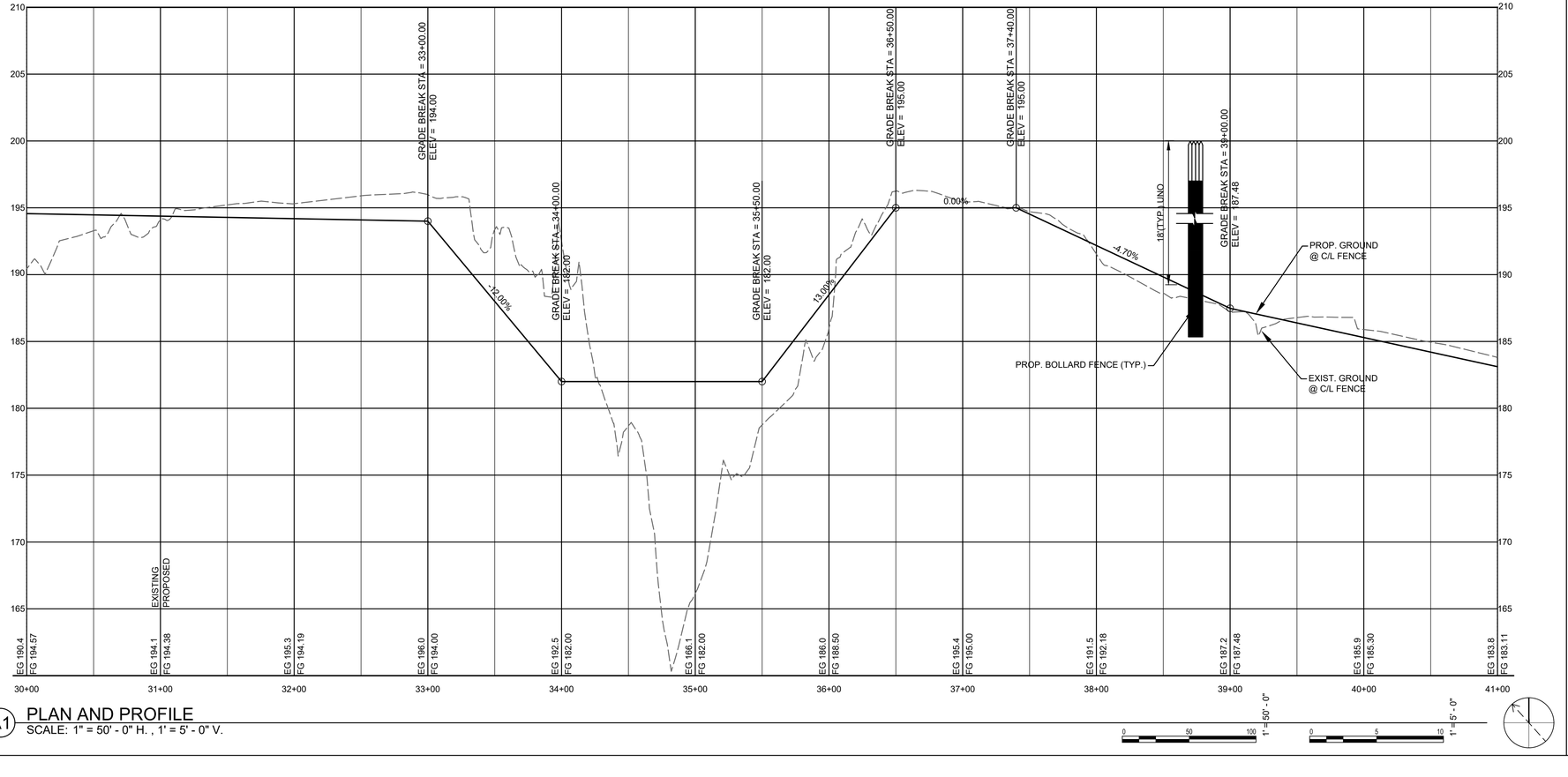
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 19+00.00 - 30+00.00

SHEET ID
ROMA
C-102

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11. PROPOSED RVSS SITE.
12. CONCEPTUAL ELECTRICAL UTILITY CONNECTION POINT.
13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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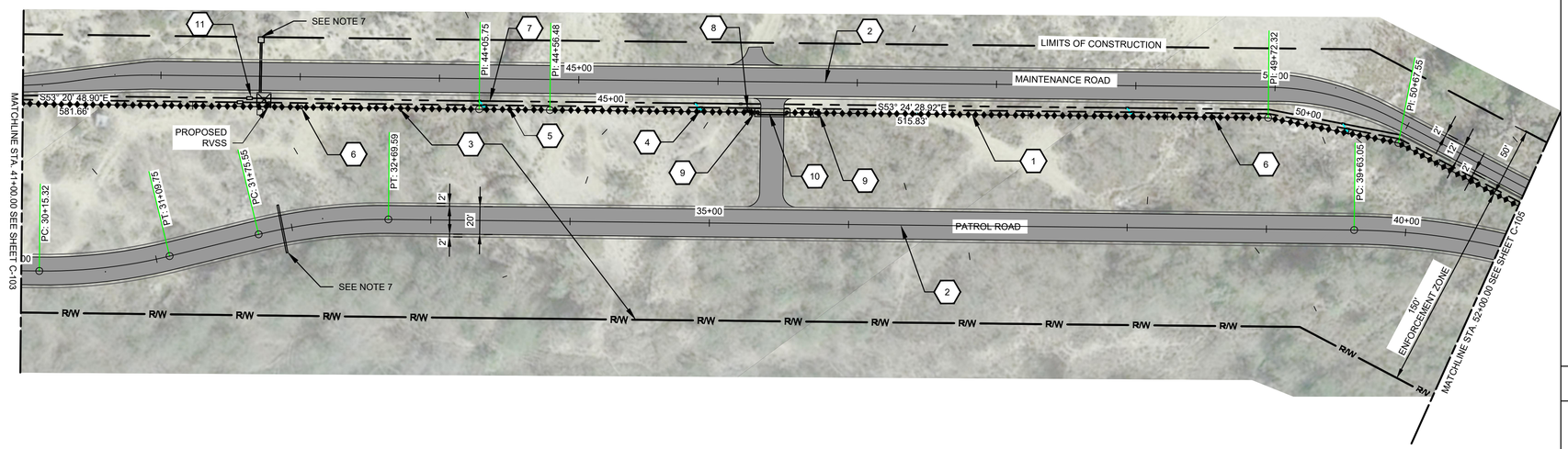
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

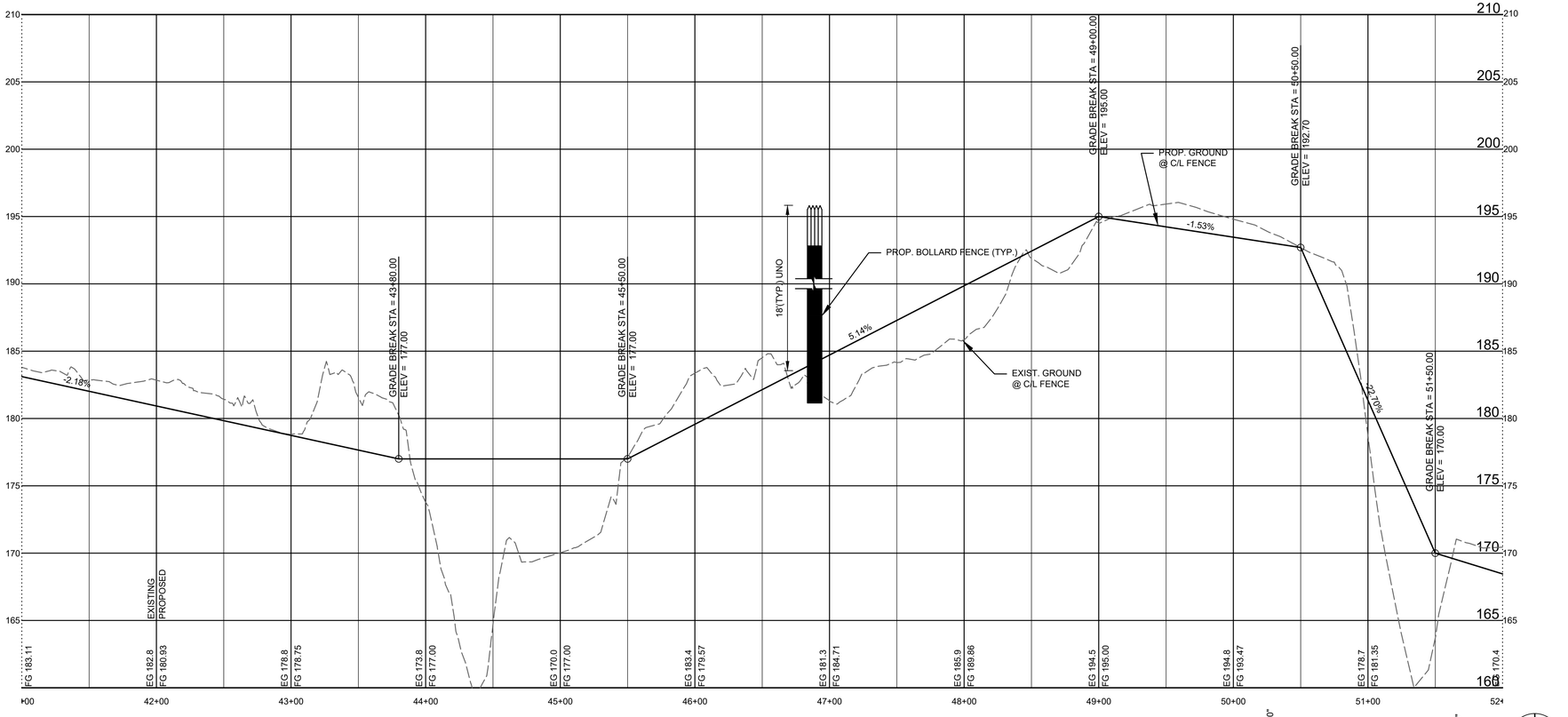
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 30+00.00 - 41+00.00

SHEET ID
ROMA
C-103




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

## GENERAL NOTES

1. THIS SHEET IS AT 35% CONCEPT DESIGN AND NOT TO BE USED FOR CONSTRUCTION.
2. CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL GEOTECHNICAL TESTING, TOPOGRAPHIC MAPPING, DESIGN, SURVEY STAKE-OUT, ABOVE AND BELOW GROUND UTILITY IDENTIFICATIONS AND REQUIRED RELOCATIONS, AND REMOVAL AND PROPER DISPOSAL OF STRUCTURES, DEBRIS, ETC. LOCATED WITHIN THE ENFORCEMENT ZONE.
3. CONTRACTOR SHALL ENSURE THAT ALL DESIGNS MEET TACTICAL INFRASTRUCTURE STANDARDS, LATEST EDITION.
4. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES, IRRIGATION CULVERTS AND DRAINAGE STRUCTURES, AND ADJUST/RELOCATE AS REQUIRED TO DE-CONFLICT WITH THE PROPOSED BOLLARD FENCE AND ENFORCEMENT ZONE (I.E.: EX. IRRIGATION VALVES TO BE RELOCATED TO NORTH LEVEE EMBANKMENT).
5. CONTRACTOR SHALL DESIGN AND INSTALL ALL DRAINAGE SYSTEMS FOR THIS PROJECT.
6. LIGHTING LOCATIONS ARE CONCEPTUAL. CONTRACTOR TO PROVIDE FINAL LIGHTING COMPUTATIONS AND LOCATIONS.
7. SEE SHEET E-502 FOR TYPICAL PLAN VIEW AT RVSS TOWER .

## KEYNOTES

1. PROPOSED NEW TYPE P-3 BOLLARD FENCE.
2. PROPOSED TYPE FC-2 AGGREGATE ALL-WEATHER ROAD.
3. CLEAR VEGETATION AND GRADE WITHIN ENFORCEMENT ZONE.
4. PROPOSED LIGHT POLE, PULLBOX, AND LIGHTING - SEE ELEC. FOR LOCATIONS. (TYP.)
5. PROPOSED POWER AND LIGHTING DISTRIBUTION CABLE AND CONDUIT/DUCTBANK.
6. PROPOSED FENCE GROUNDING LOCATIONS.
7. PROPOSED COMMUNICATION CONDUIT/ DUCTBANK. (CABLE FUTURE BY OTHERS)
8. GATE ELECTRICAL DISTRIBUTION EQUIPMENT.
9. GATE GROUNDING LOCATIONS.
10. PROPOSED MOTORIZED VEHICLE SLIDE GATE.
11. PROPOSED RVSS SITE.
12. CONCEPTUAL ELECTRICAL UTILITY CONNECTION POINT.
13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

US Army Corps of Engineers ®

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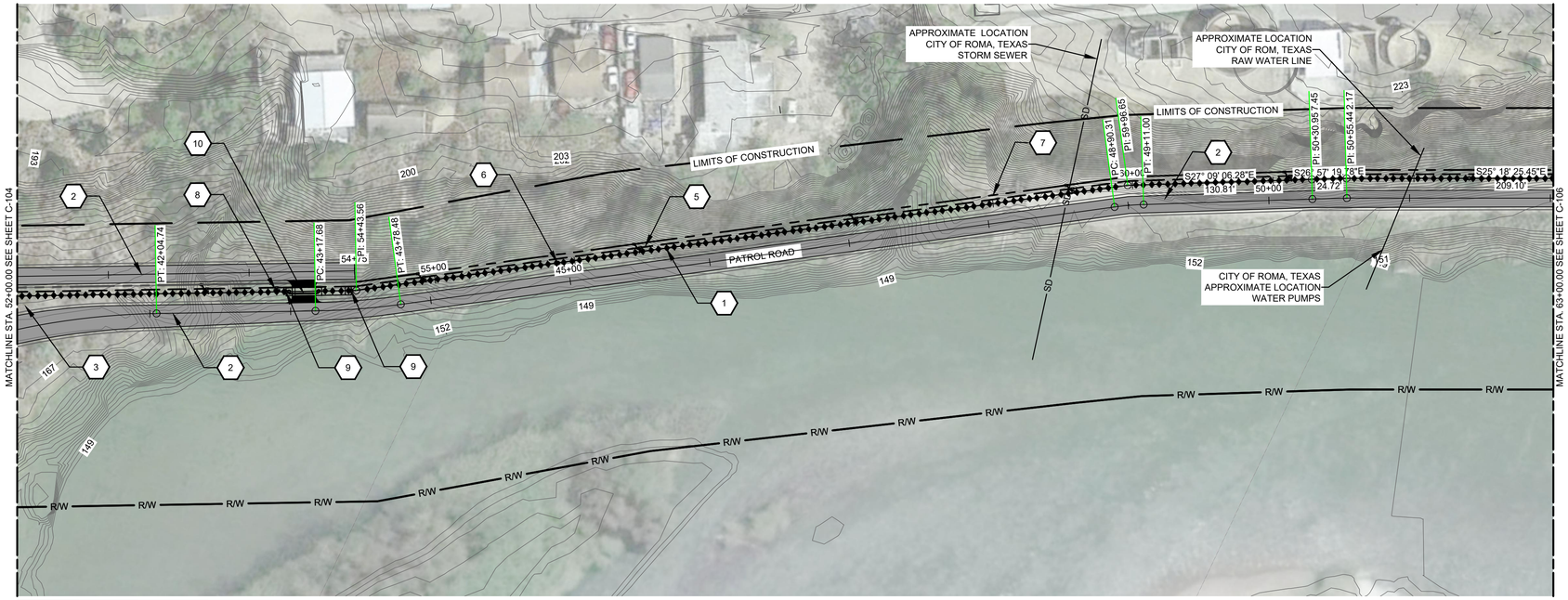
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

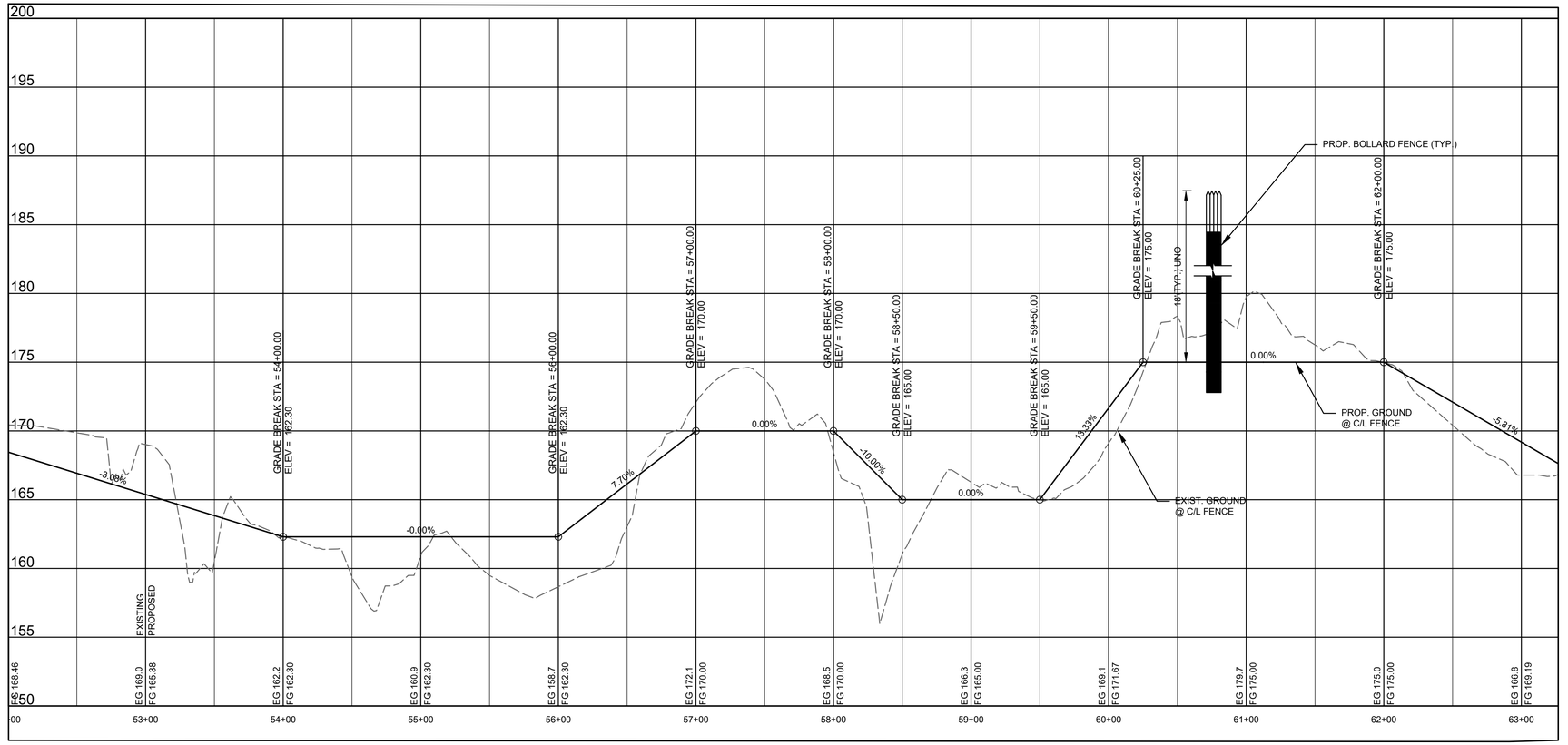
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 41+00.00 - 52+00.00

SHEET ID
ROMA
C-104

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US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
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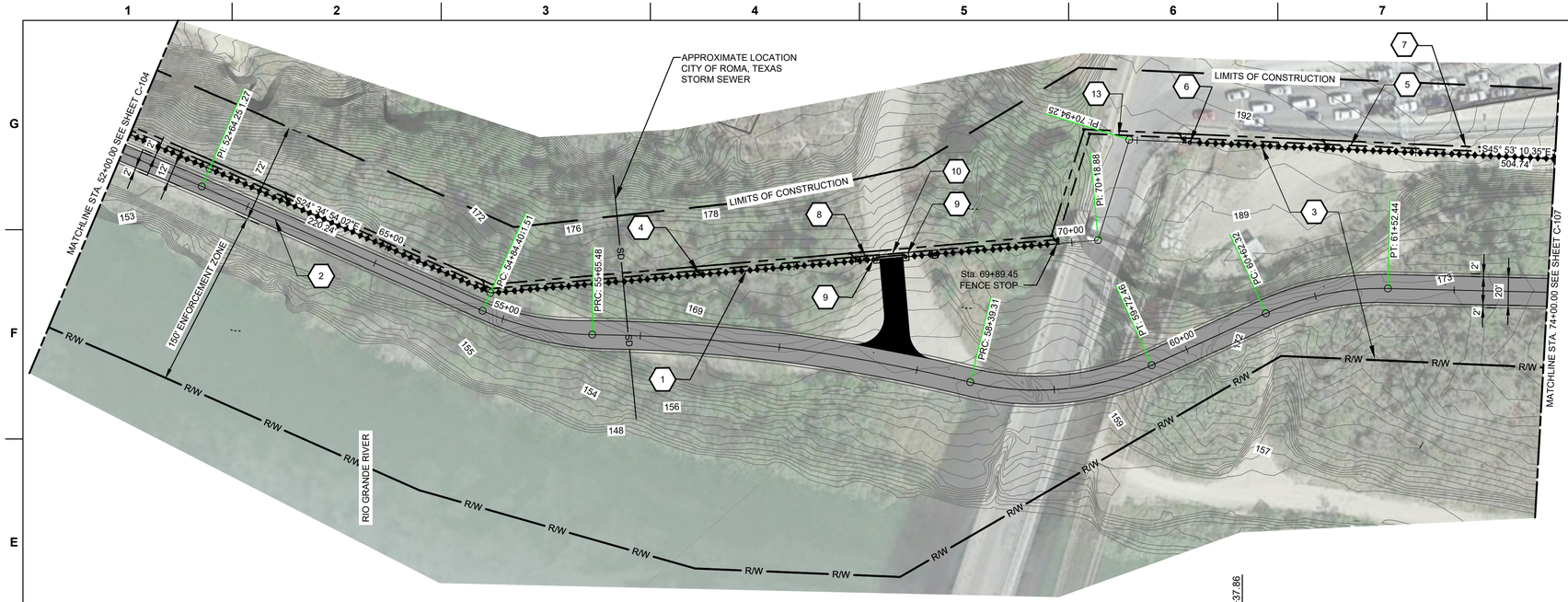
GALVESTON, TX 77553-1229

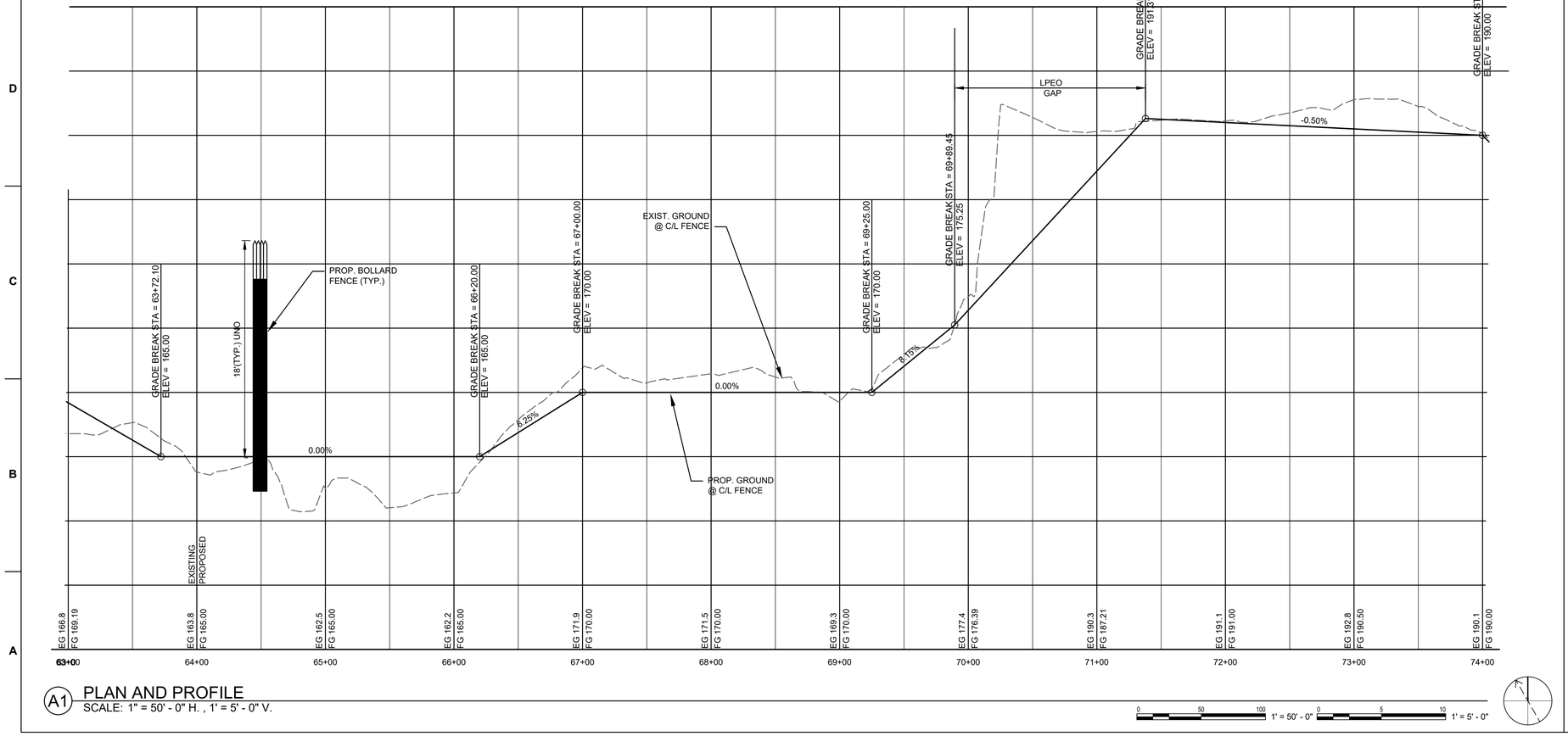
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 52+00.00 - 63+00.00

SHEET ID
ROMA
C-105




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

0 50 100 1' = 50' - 0"
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US Army Corps of Engineers ®

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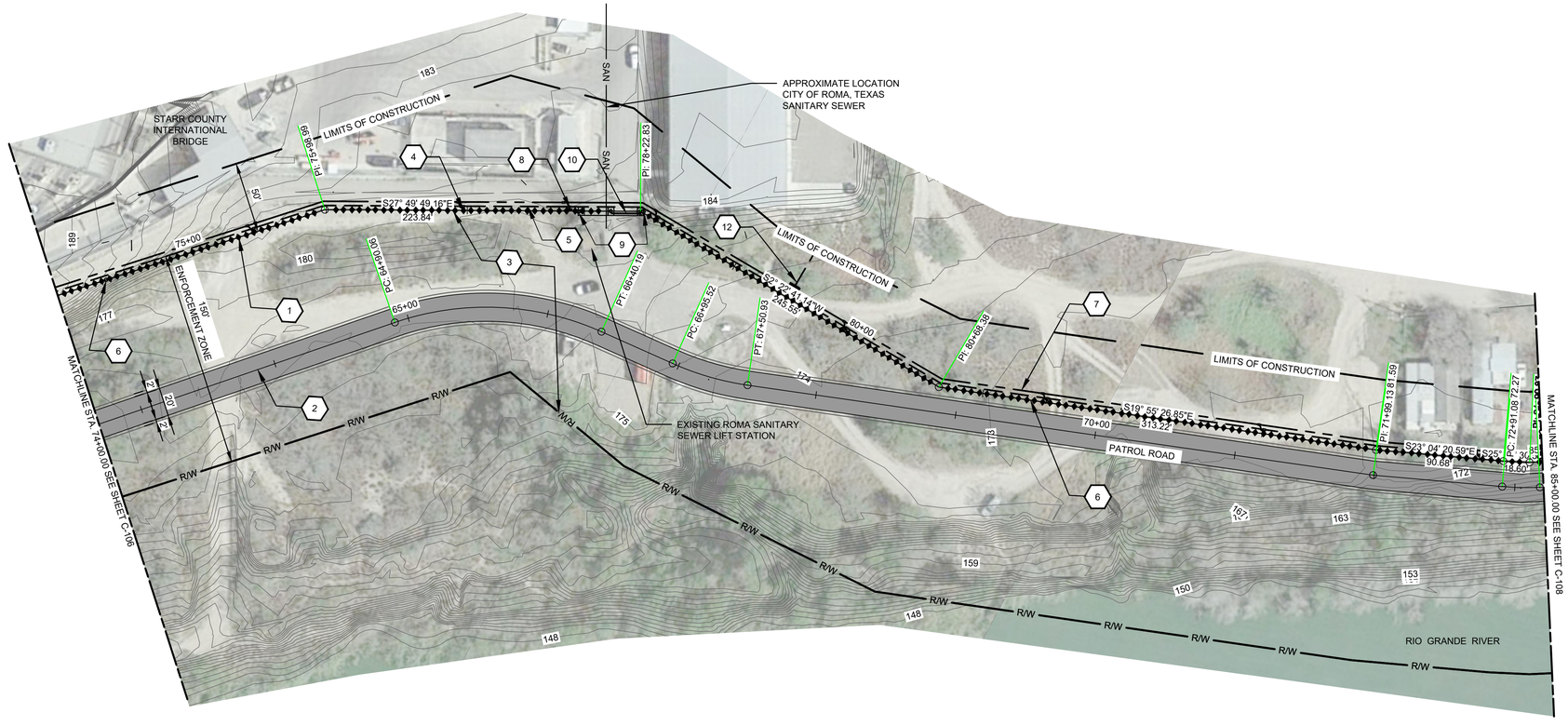
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

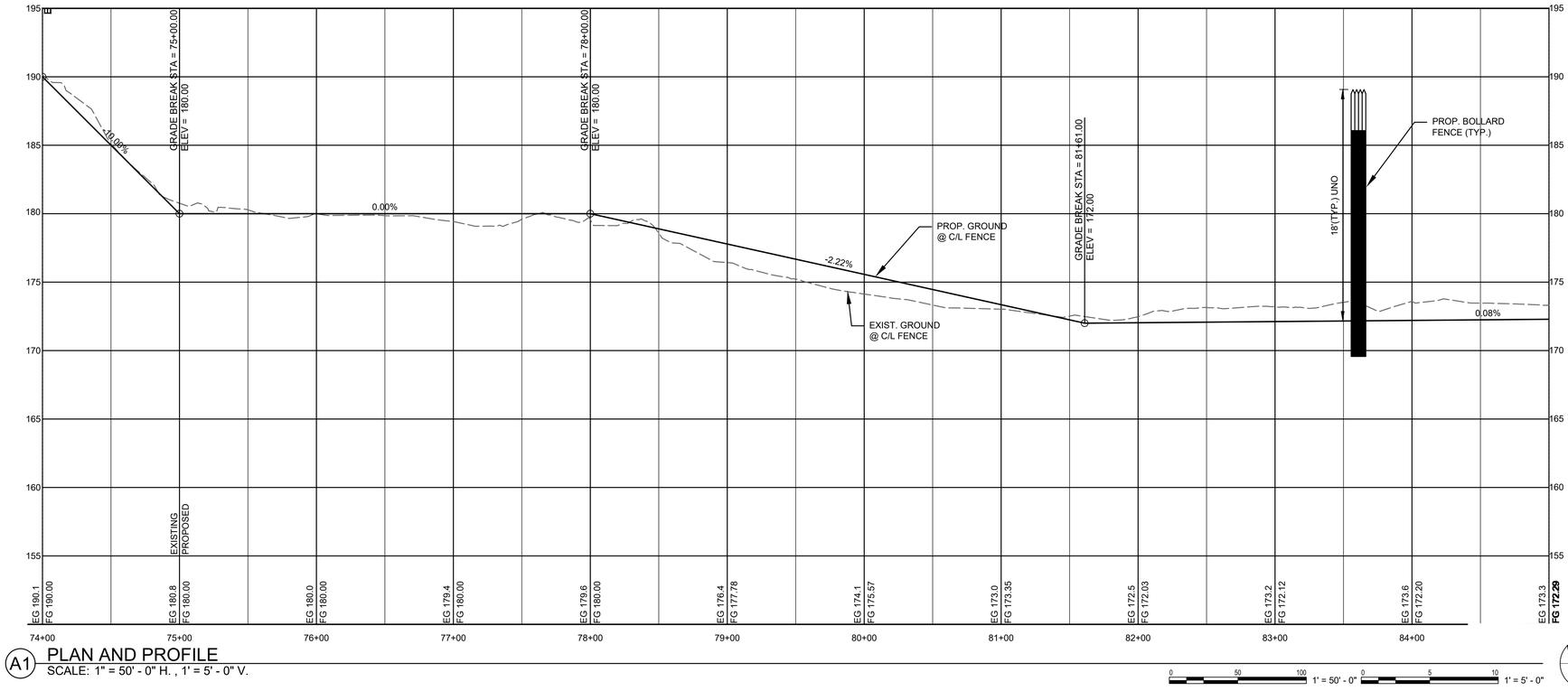
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 63+00.00 - 74+00.00

SHEET ID
ROMA
C-106




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

1' = 50' - 0" 1' = 5' - 0"

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US Army Corps of Engineers ®

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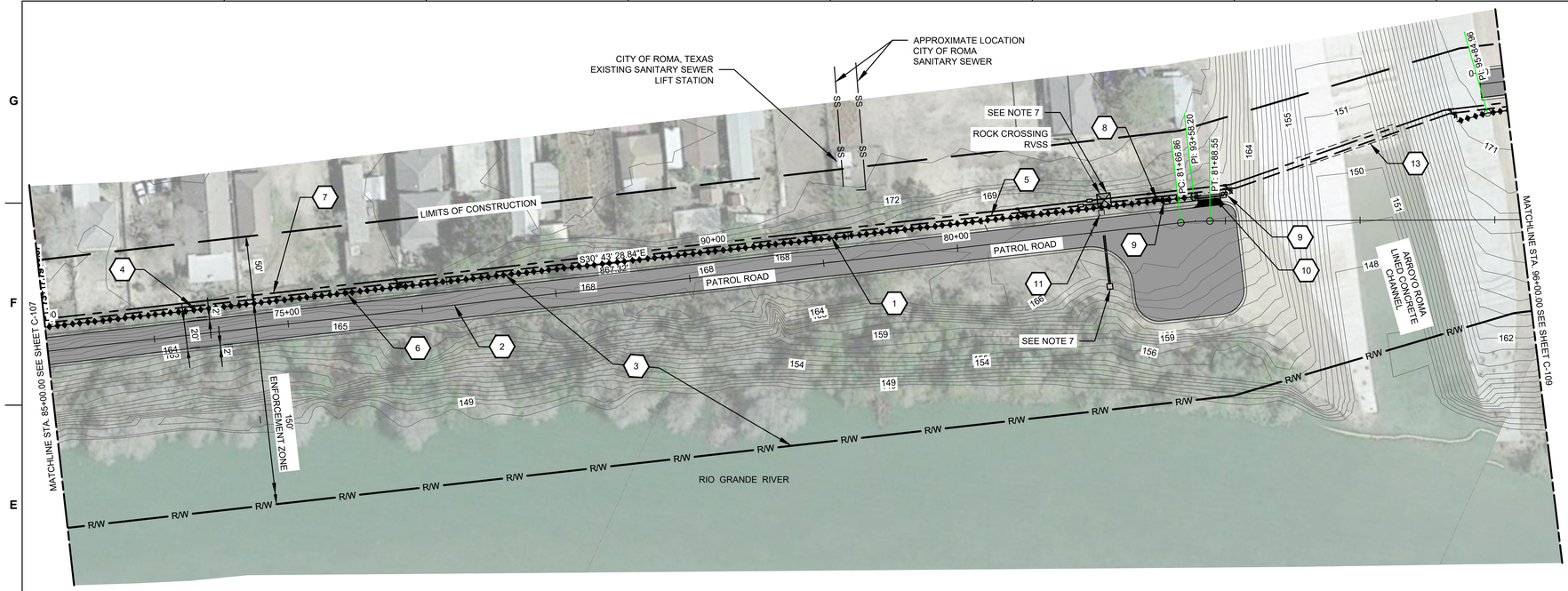
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

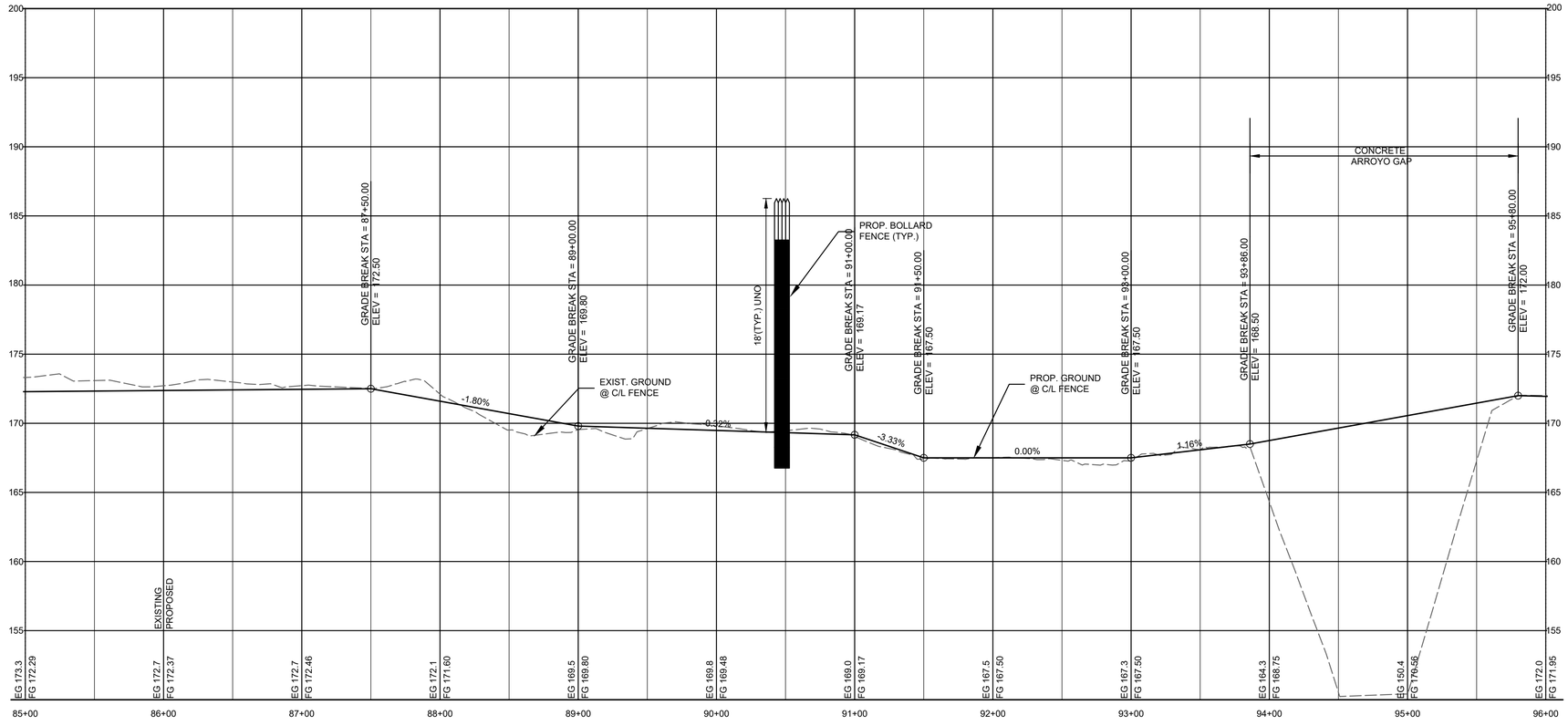
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 74+00.00 - 85+00.00

SHEET ID
ROMA
C-107




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

0 50 100 1' = 50' - 0"  0 5 10 1' = 5' - 0"

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US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
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ETEGRA
17218 PRESTON RD., SUITE 3300
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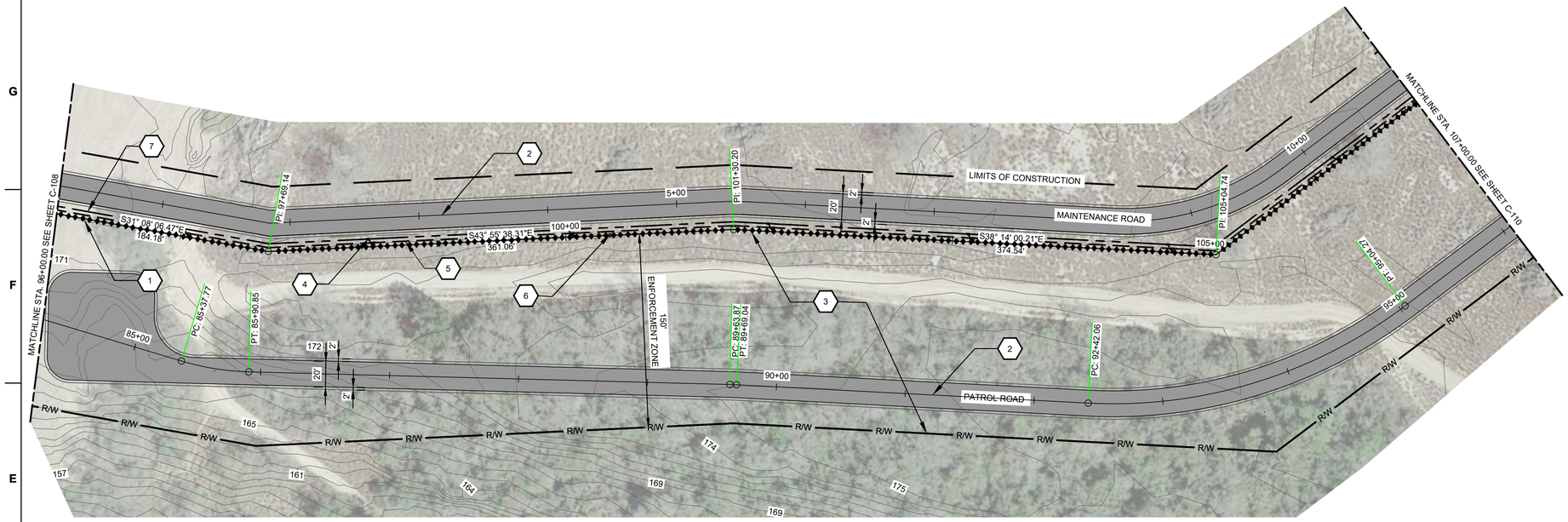
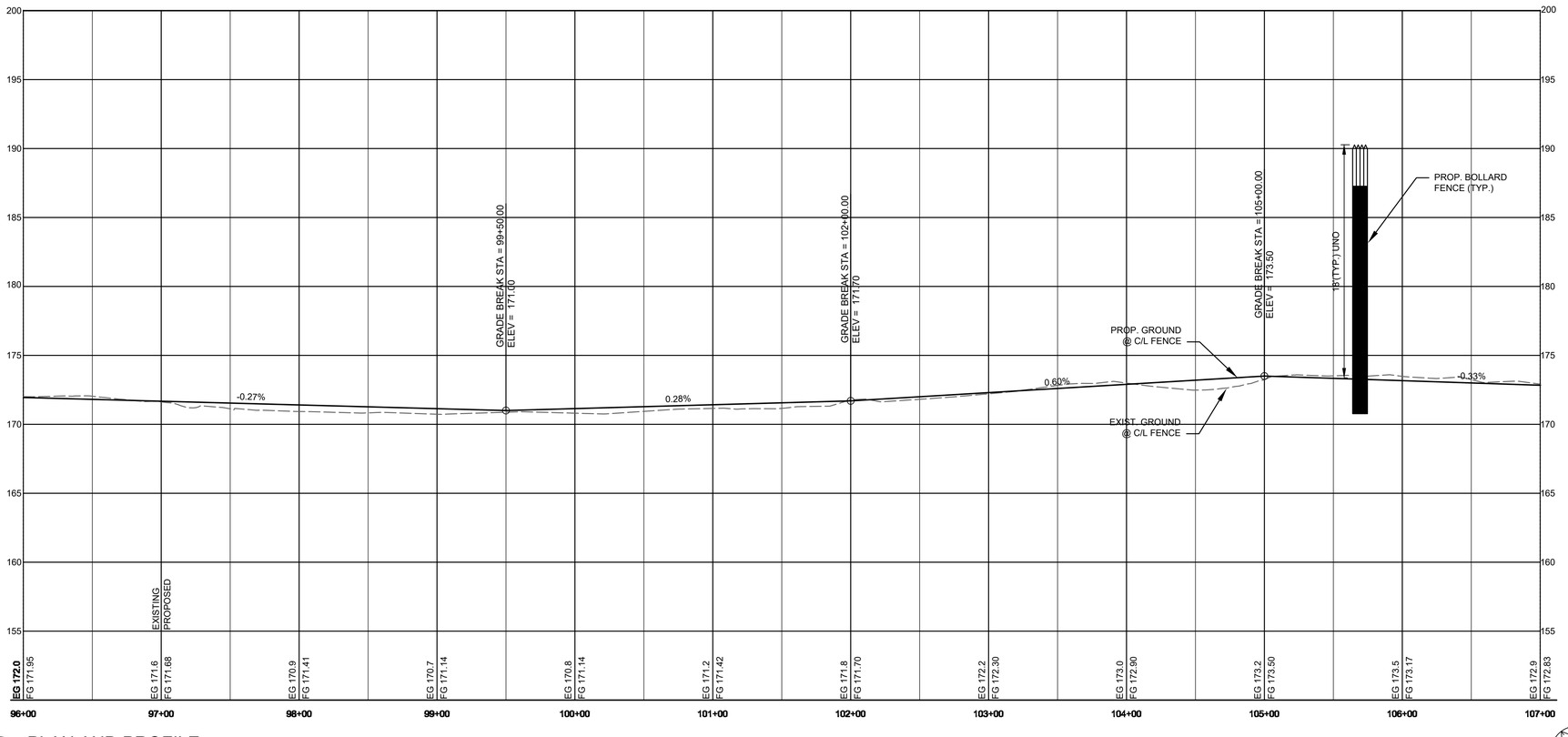
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 85+00.00 - 96+00.00

SHEET ID
ROMA
C-108

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US ARMY CORPS OF ENGINEERS
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ETEGRA
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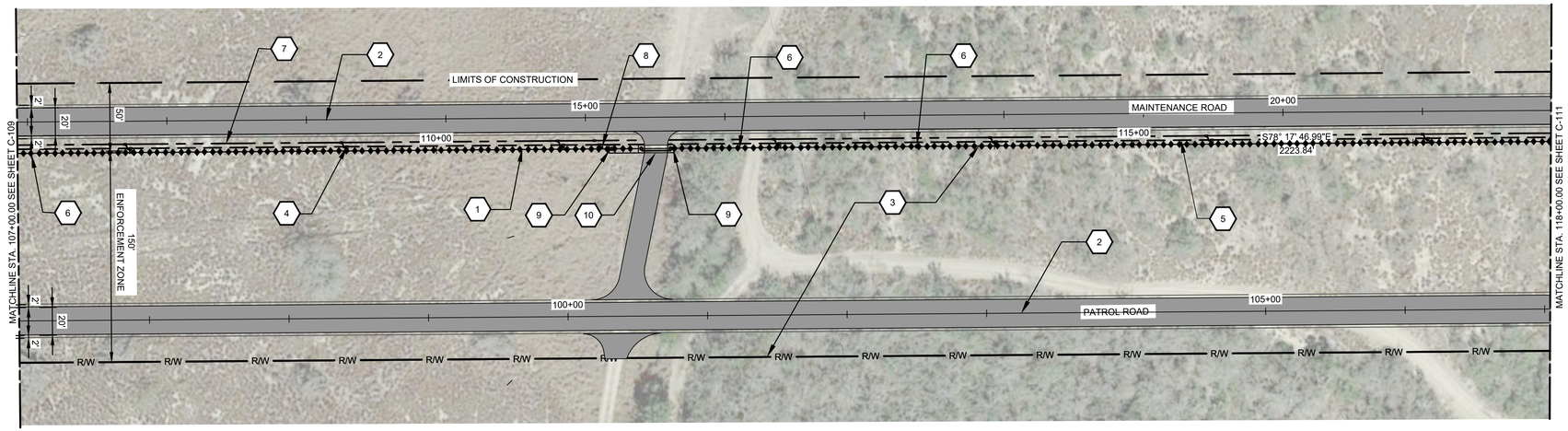
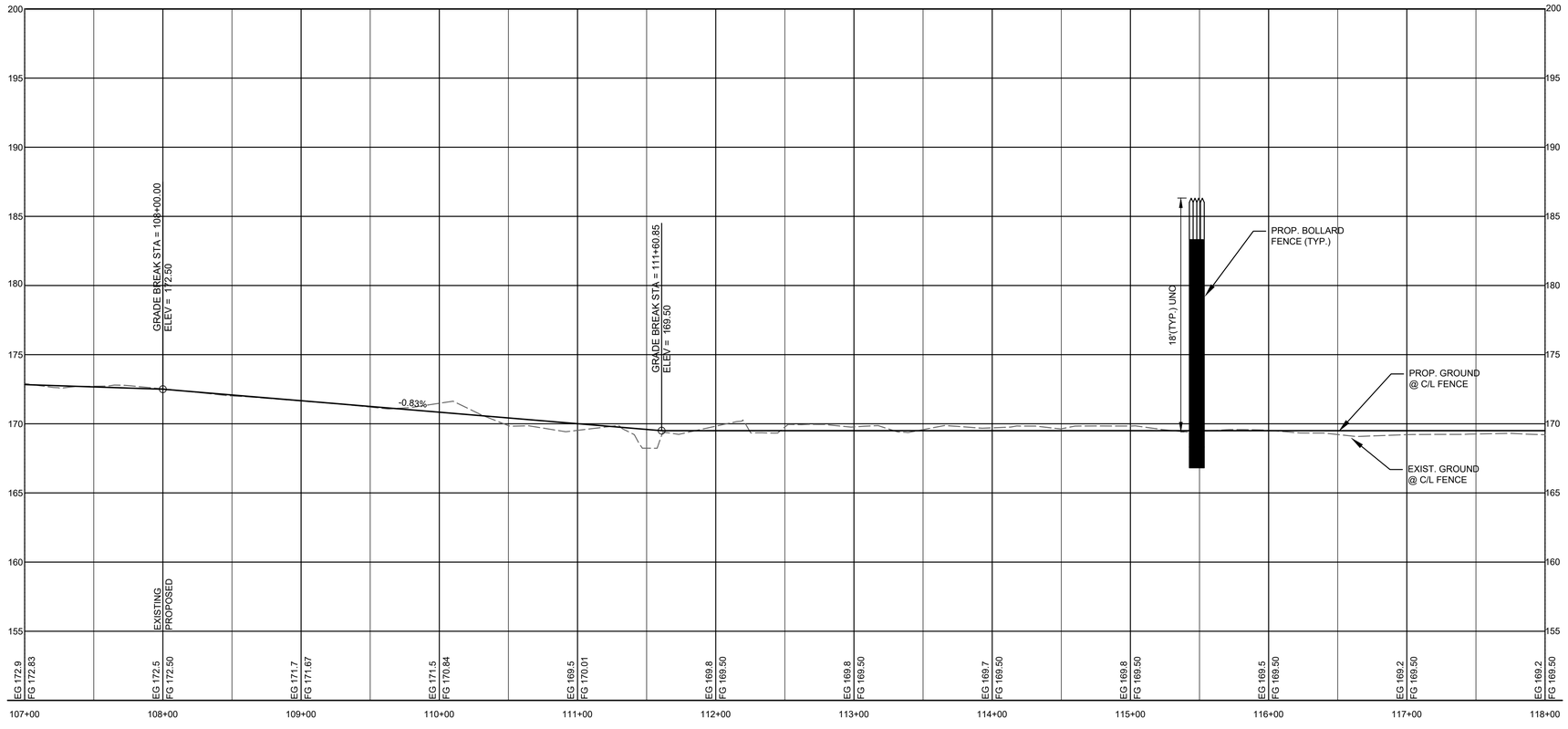
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 96+00.00 - 107+00.00

SHEET ID
ROMA
C-109

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7. PROPOSED COMMUNICATION CONDUIT/ DUCTBANK. (CABLE FUTURE BY OTHERS)
8. GATE ELECTRICAL DISTRIBUTION EQUIPMENT.
9. GATE GROUNDING LOCATIONS.
10. PROPOSED MOTORIZED VEHICLE SLIDE GATE.
11. PROPOSED RVSS SITE.
12. CONCEPTUAL ELECTRICAL UTILITY CONNECTION POINT.
13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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SIZE: ANSI D

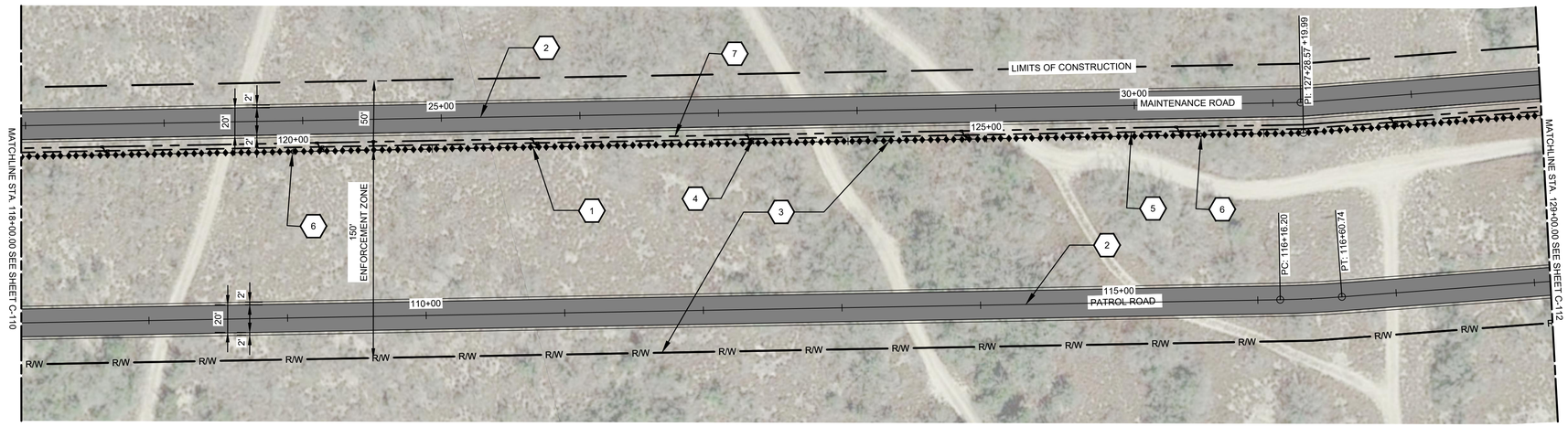
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

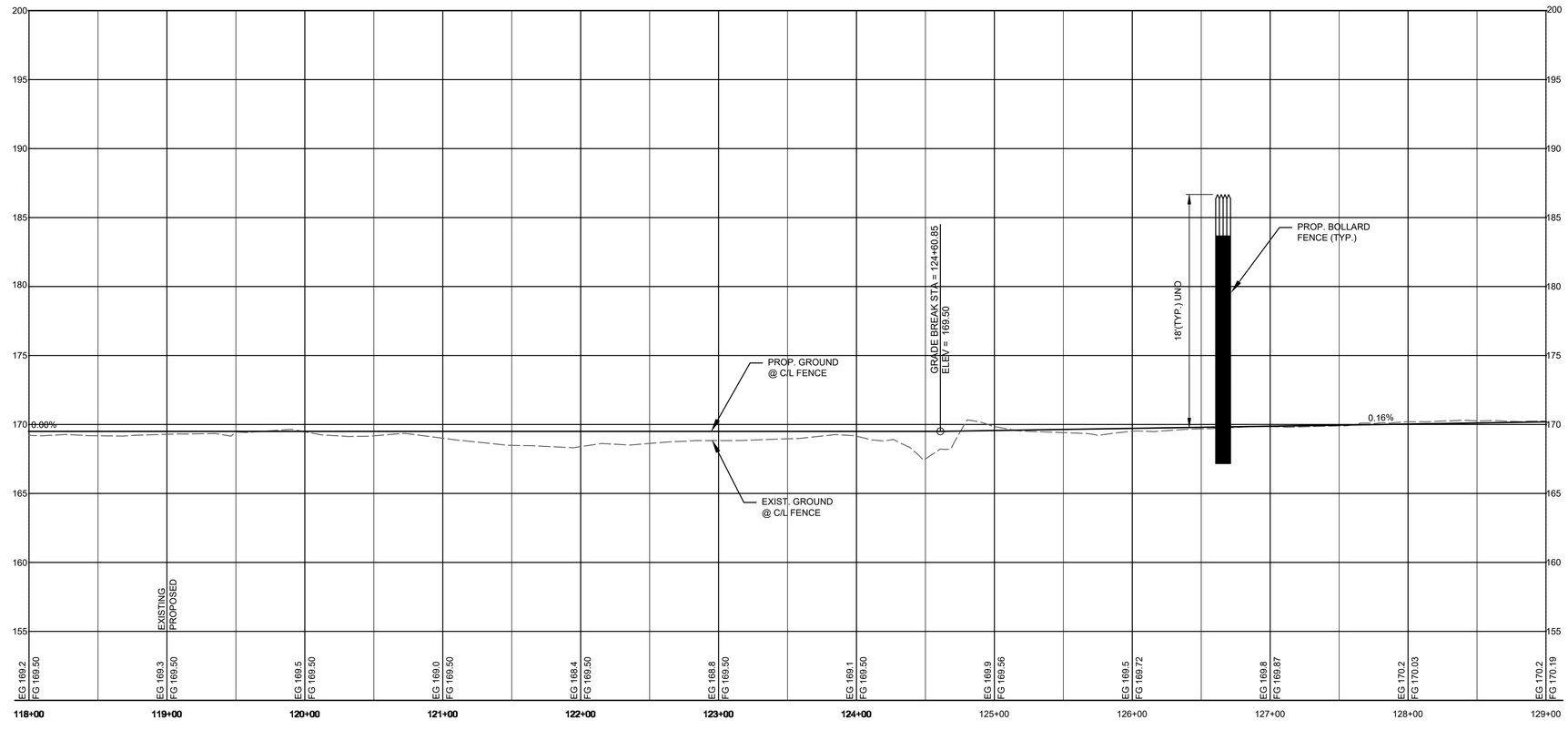
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 107+00.00 - 118+00.00

SHEET ID
ROMA
C-110




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

0 50 100 1' = 50' - 0"  0 5 10 1' = 5' - 0"

## GENERAL NOTES

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3. CONTRACTOR SHALL ENSURE THAT ALL DESIGNS MEET TACTICAL INFRASTRUCTURE STANDARDS, LATEST EDITION.
4. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES, IRRIGATION CULVERTS AND DRAINAGE STRUCTURES, AND ADJUST/RELOCATE AS REQUIRED TO DE-CONFLICT WITH THE PROPOSED BOLLARD FENCE AND ENFORCEMENT ZONE (I.E.: EX. IRRIGATION VALVES TO BE RELOCATED TO NORTH LEVEE EMBANKMENT).
5. CONTRACTOR SHALL DESIGN AND INSTALL ALL DRAINAGE SYSTEMS FOR THIS PROJECT.
6. LIGHTING LOCATIONS ARE CONCEPTUAL. CONTRACTOR TO PROVIDE FINAL LIGHTING COMPUTATIONS AND LOCATIONS.

## KEYNOTES

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2. PROPOSED TYPE FC-2 AGGREGATE ALL-WEATHER ROAD.
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US Army Corps of Engineers ®

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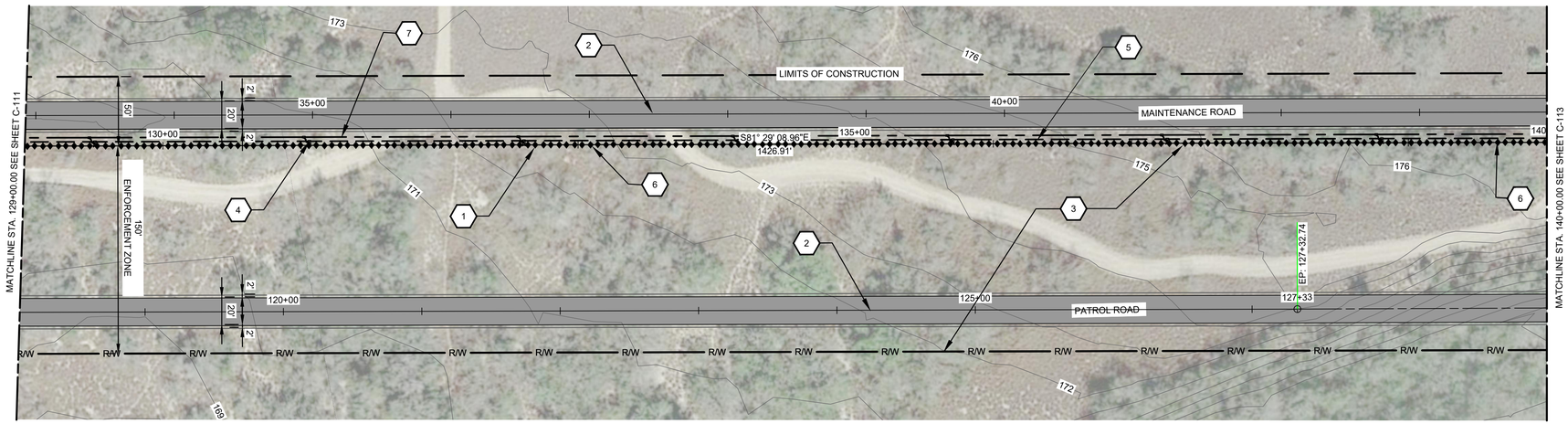
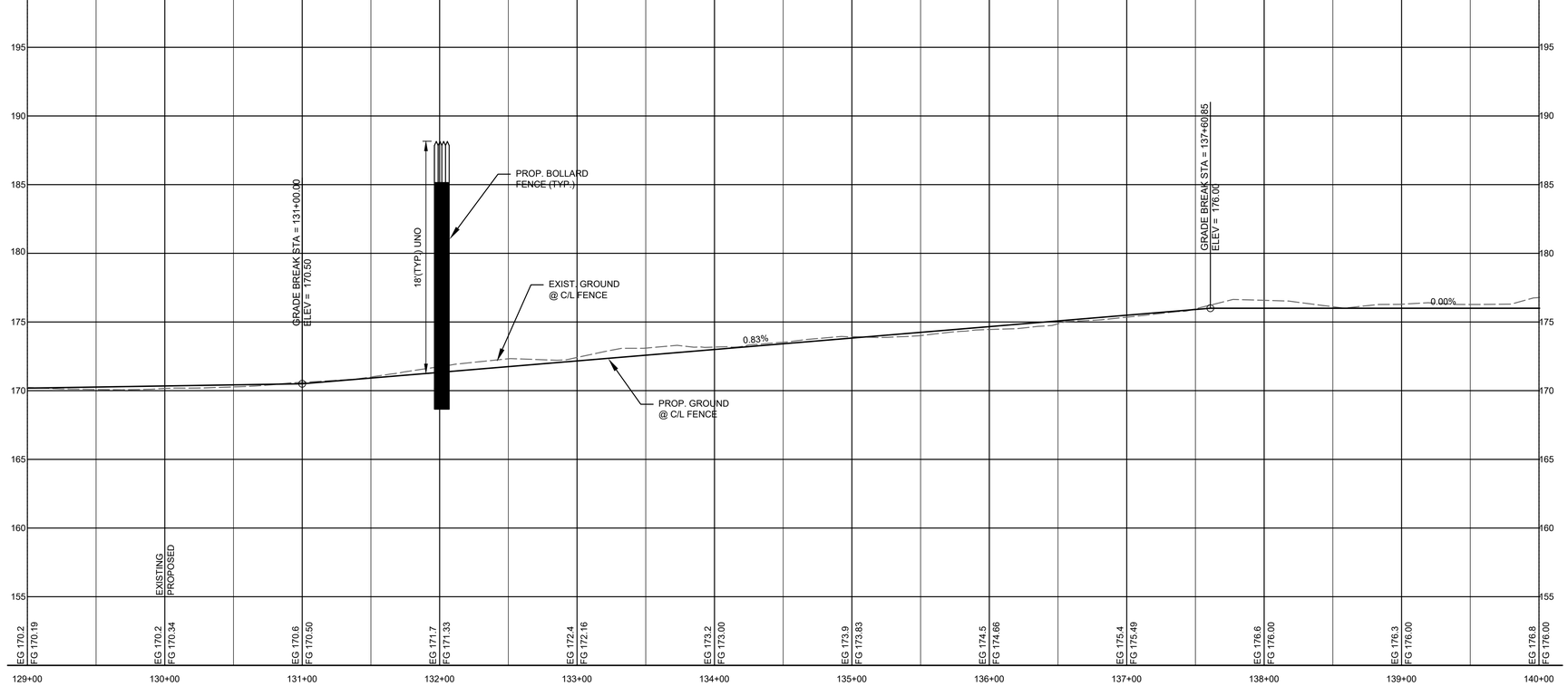
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 118+00.00 - 129+00.00

SHEET ID
ROMA
C-111

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US Army Corps of Engineers ®

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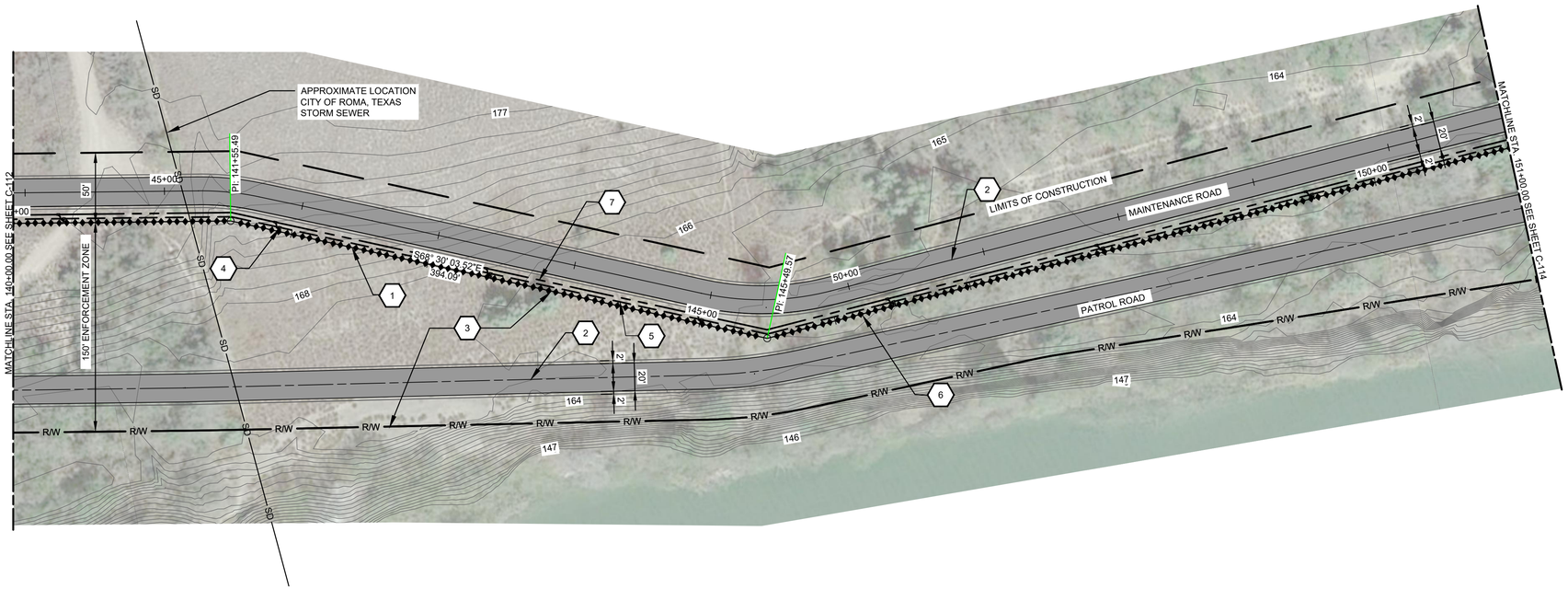
GALVESTON, TX 77553-1229

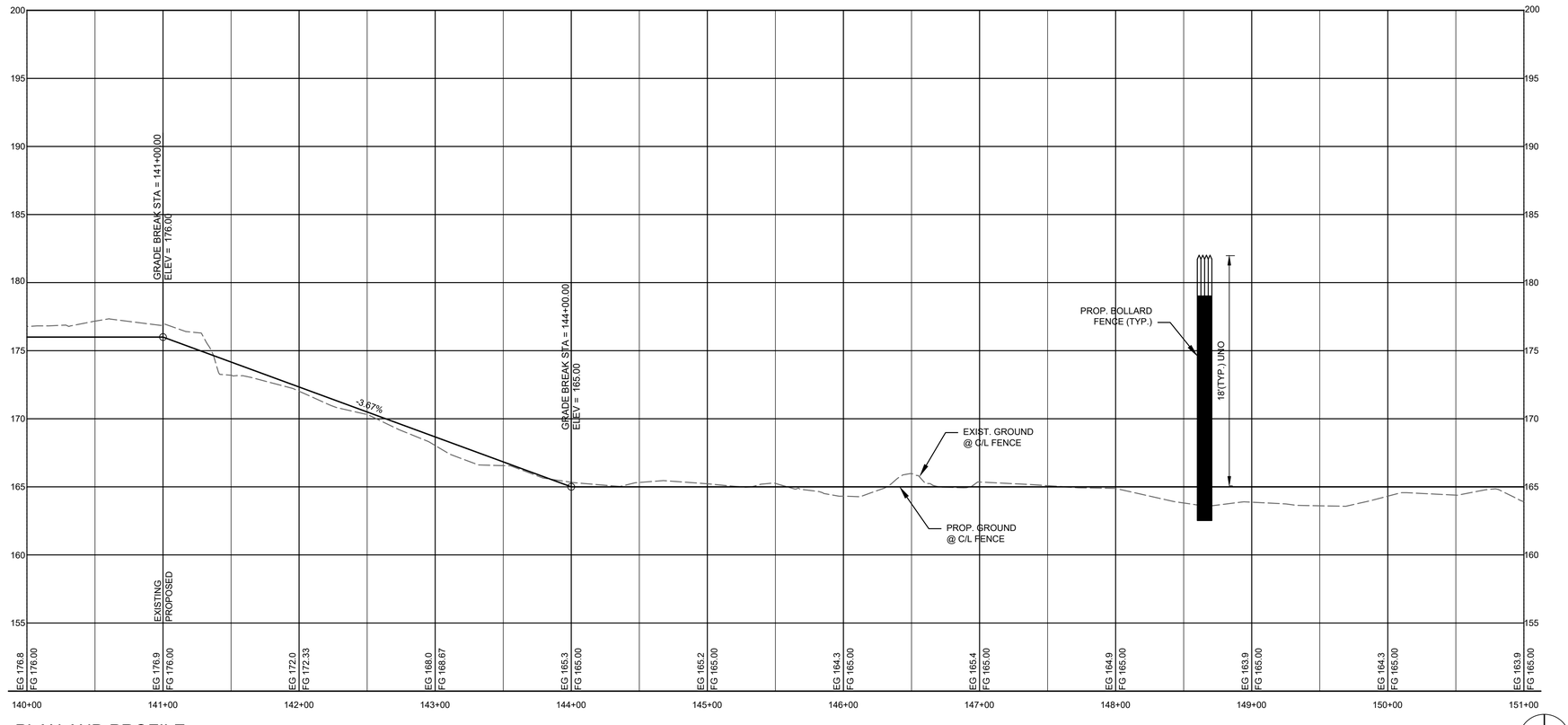
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 129+00.00 - 140+00.00

SHEET ID
ROMA
C-112

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US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
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GALVESTON, TX 77553-1229

ETEGRA
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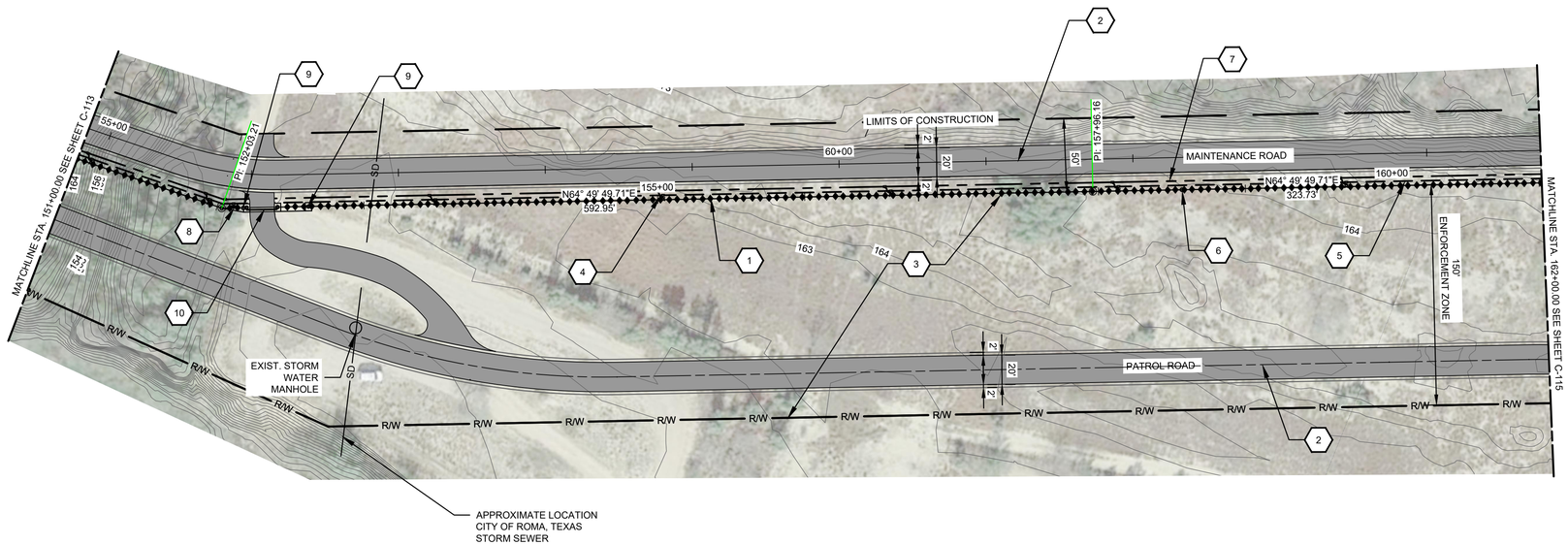
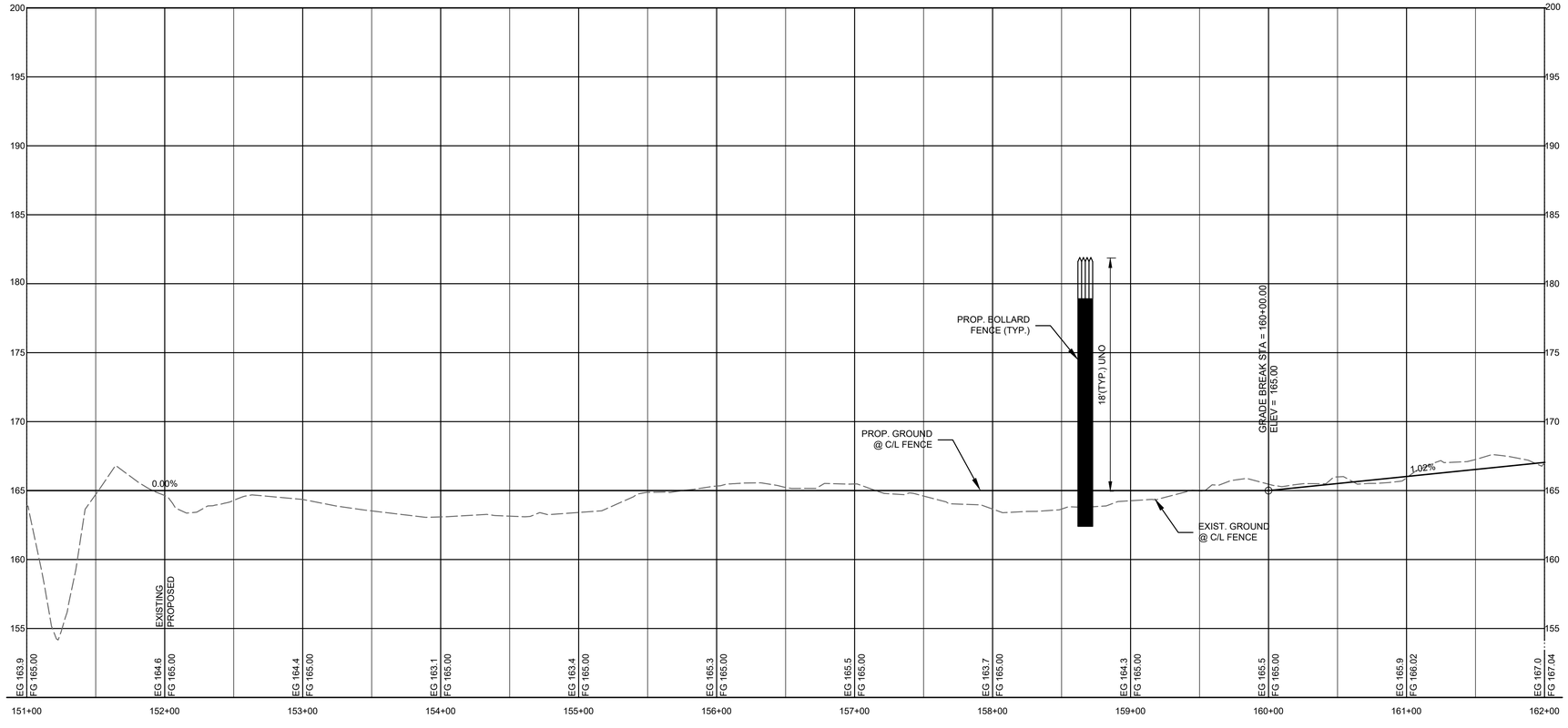
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 140+00.00 - 151+00.00

SHEET ID
ROMA
C-113

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US Army Corps of Engineers ®

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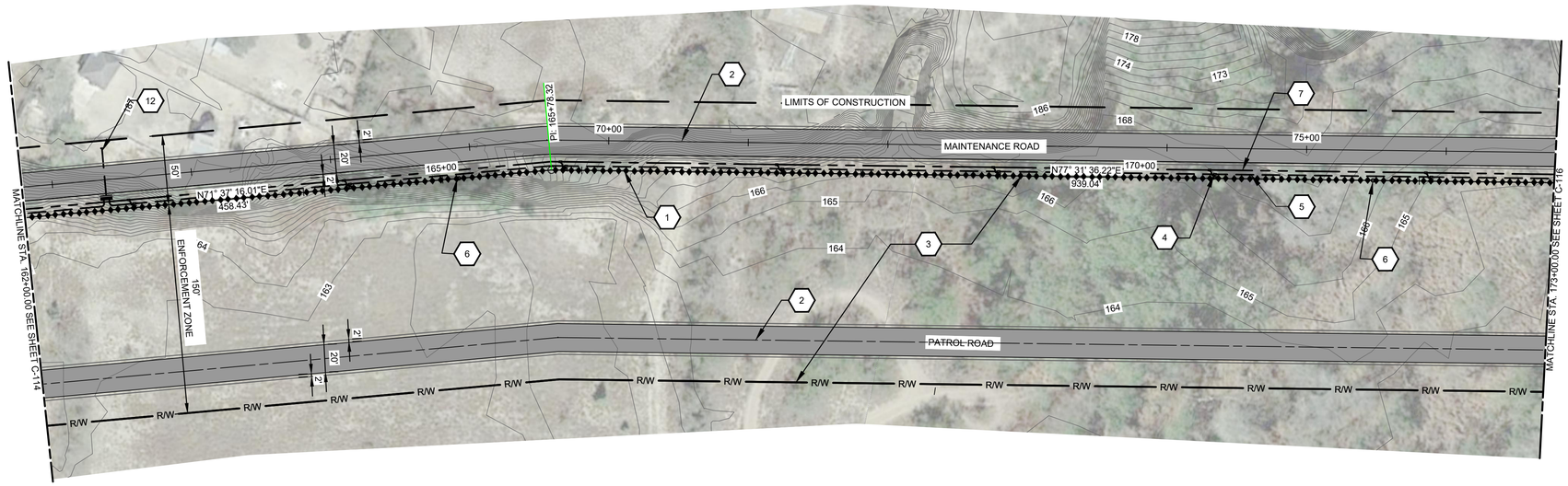
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

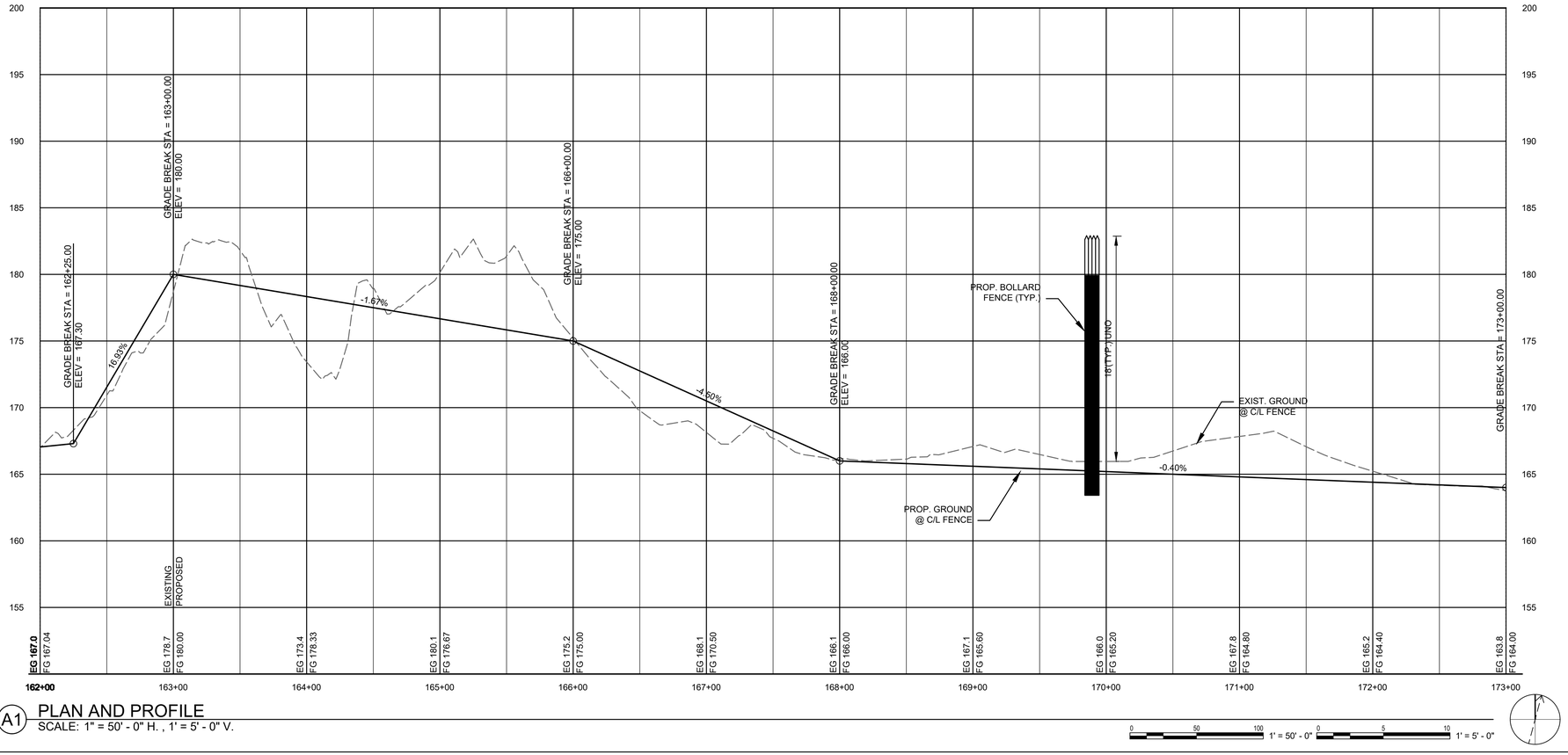
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 151+00.00 - 162+00.00

SHEET ID
ROMA
C-114




A1 PLAN AND PROFILE
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US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
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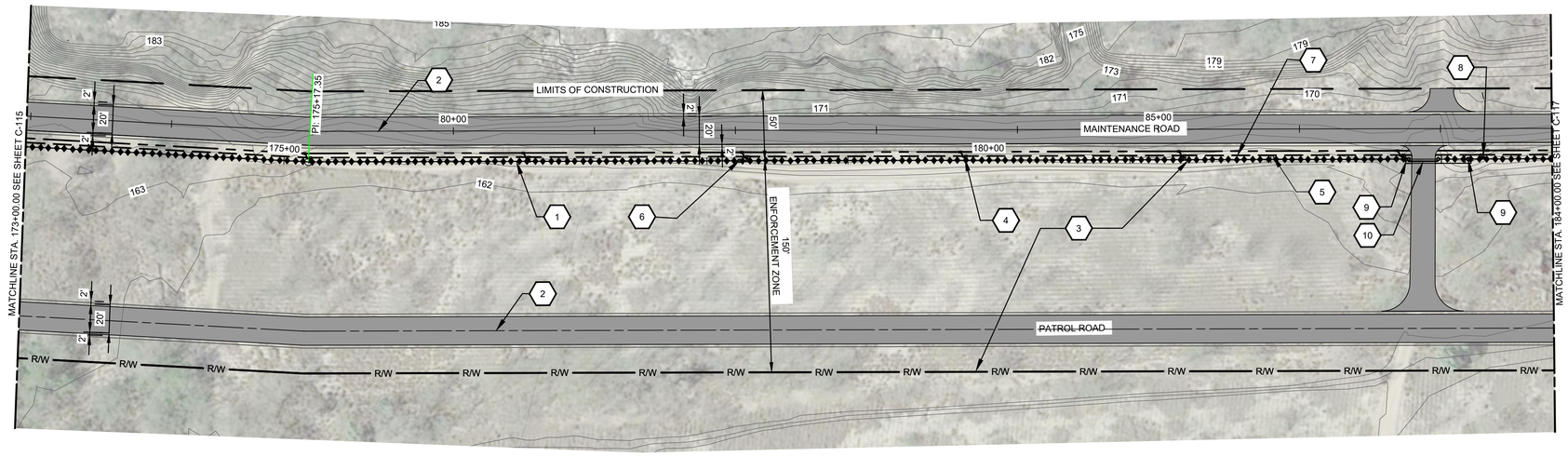
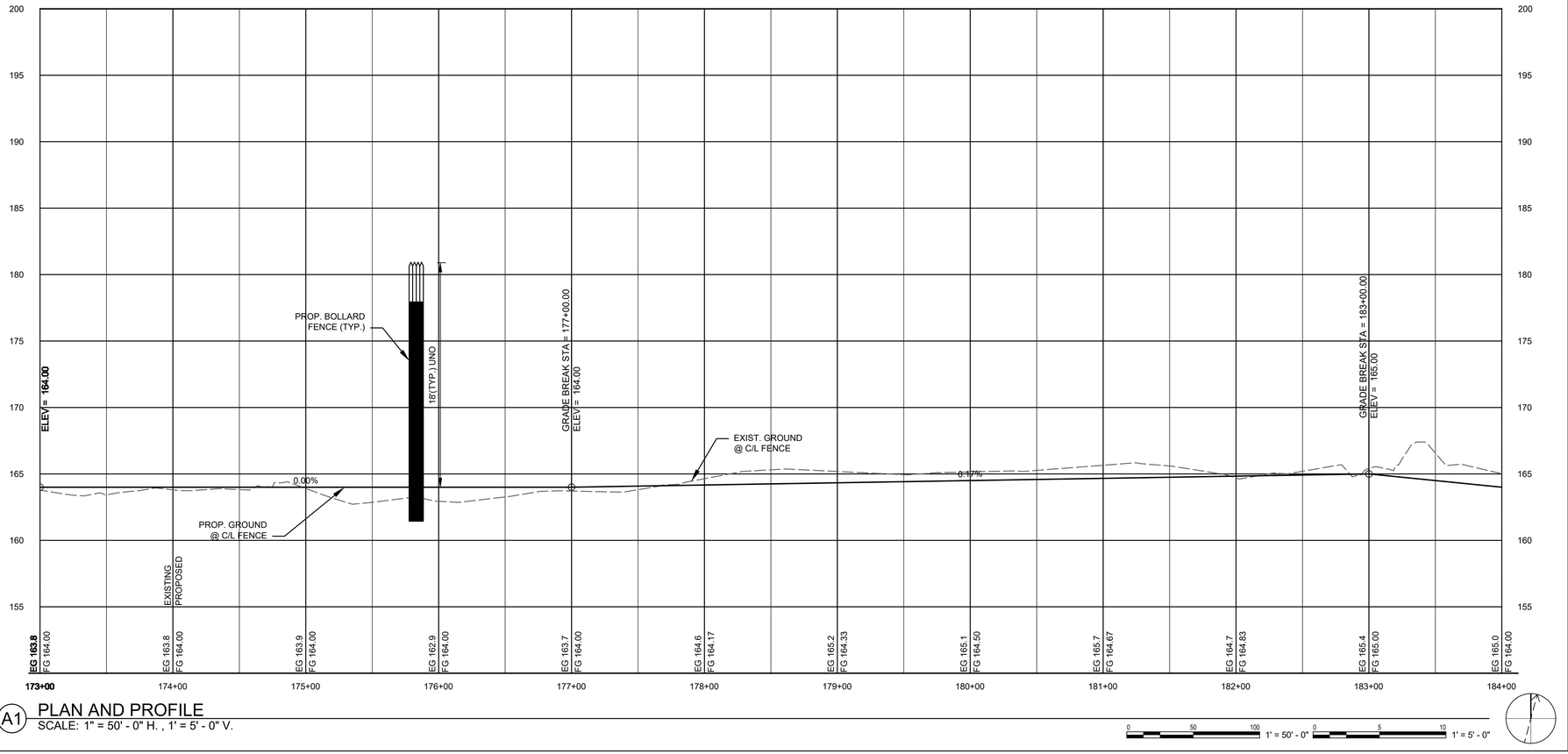
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 162+00.00 - 173+00.00

SHEET ID
ROMA
C-115

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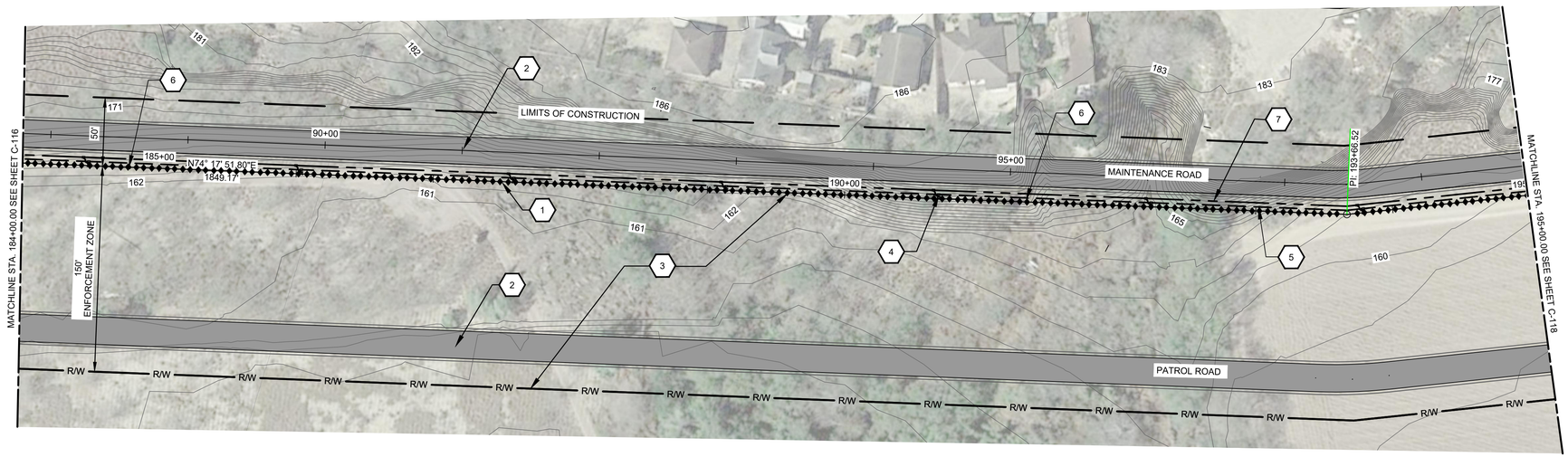
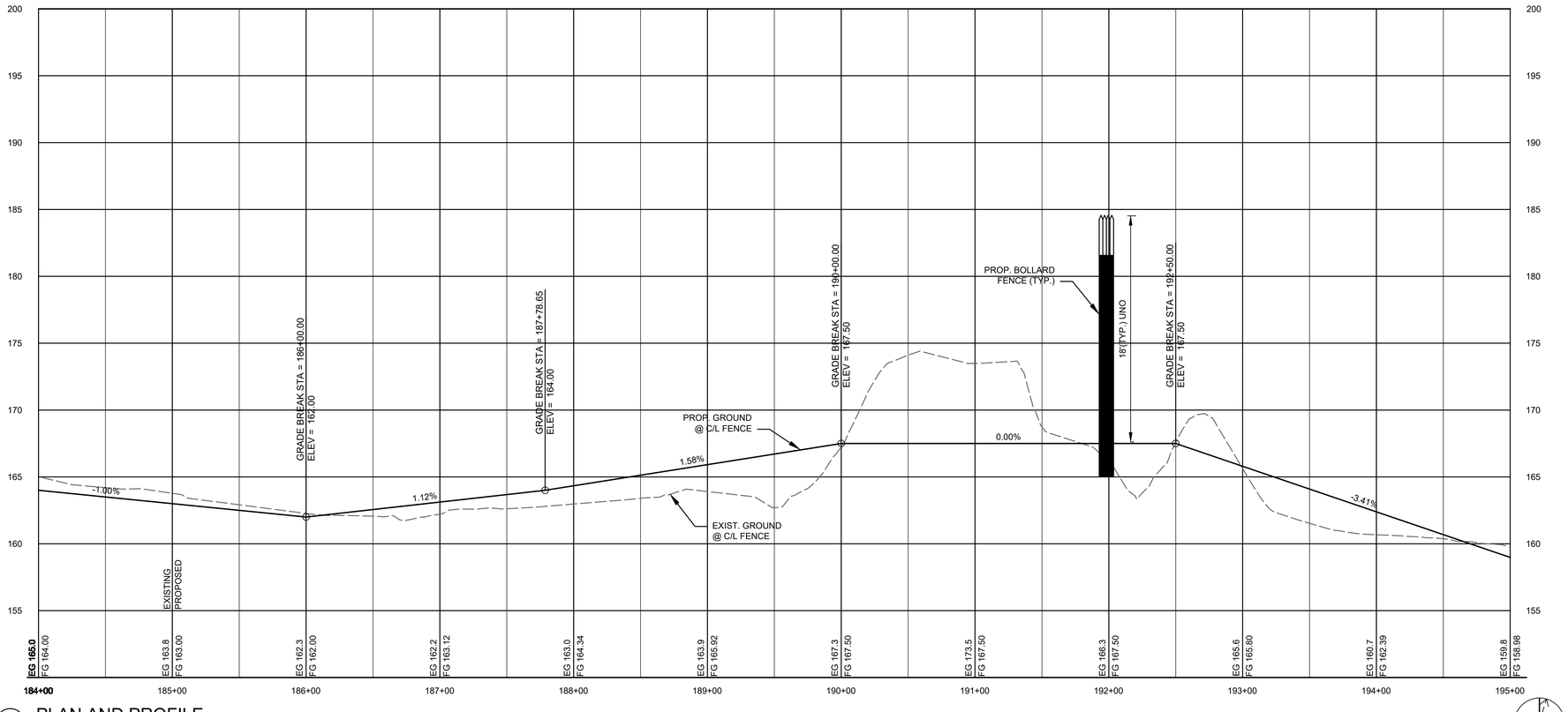
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 173+00.00 - 184+00.00

SHEET ID
ROMA
C-116

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## KEYNOTES

1. PROPOSED NEW TYPE P-3 BOLLARD FENCE.
2. PROPOSED TYPE FC-2 AGGREGATE ALL-WEATHER ROAD.
3. CLEAR VEGETATION AND GRADE WITHIN ENFORCEMENT ZONE.
4. PROPOSED LIGHT POLE, PULLBOX, AND LIGHTING - SEE ELEC. FOR LOCATIONS. (TYP.)
5. PROPOSED POWER AND LIGHTING DISTRIBUTION CABLE AND CONDUIT/DUCTBANK.
6. PROPOSED FENCE GROUNDING LOCATIONS.
7. PROPOSED COMMUNICATION CONDUIT/ DUCTBANK. (CABLE FUTURE BY OTHERS)
8. GATE ELECTRICAL DISTRIBUTION EQUIPMENT.
9. GATE GROUNDING LOCATIONS.
10. PROPOSED MOTORIZED VEHICLE SLIDE GATE.
11. PROPOSED RVSS SITE.
12. CONCEPTUAL ELECTRICAL UTILITY CONNECTION POINT.
13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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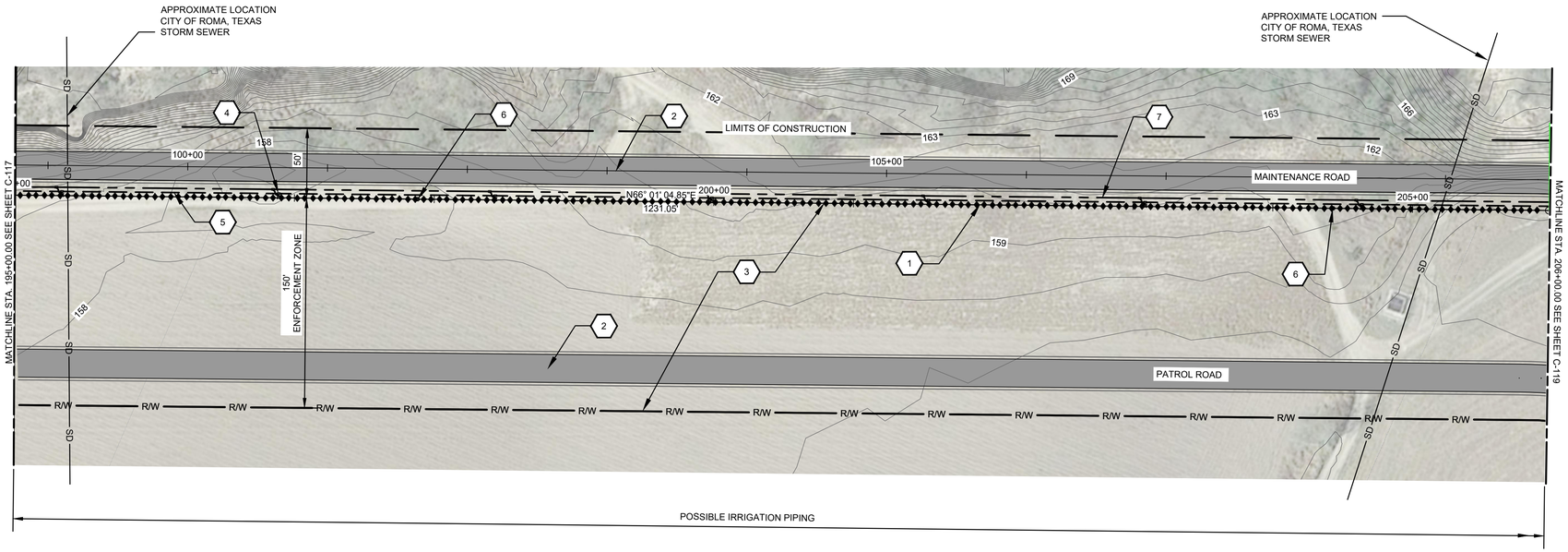
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

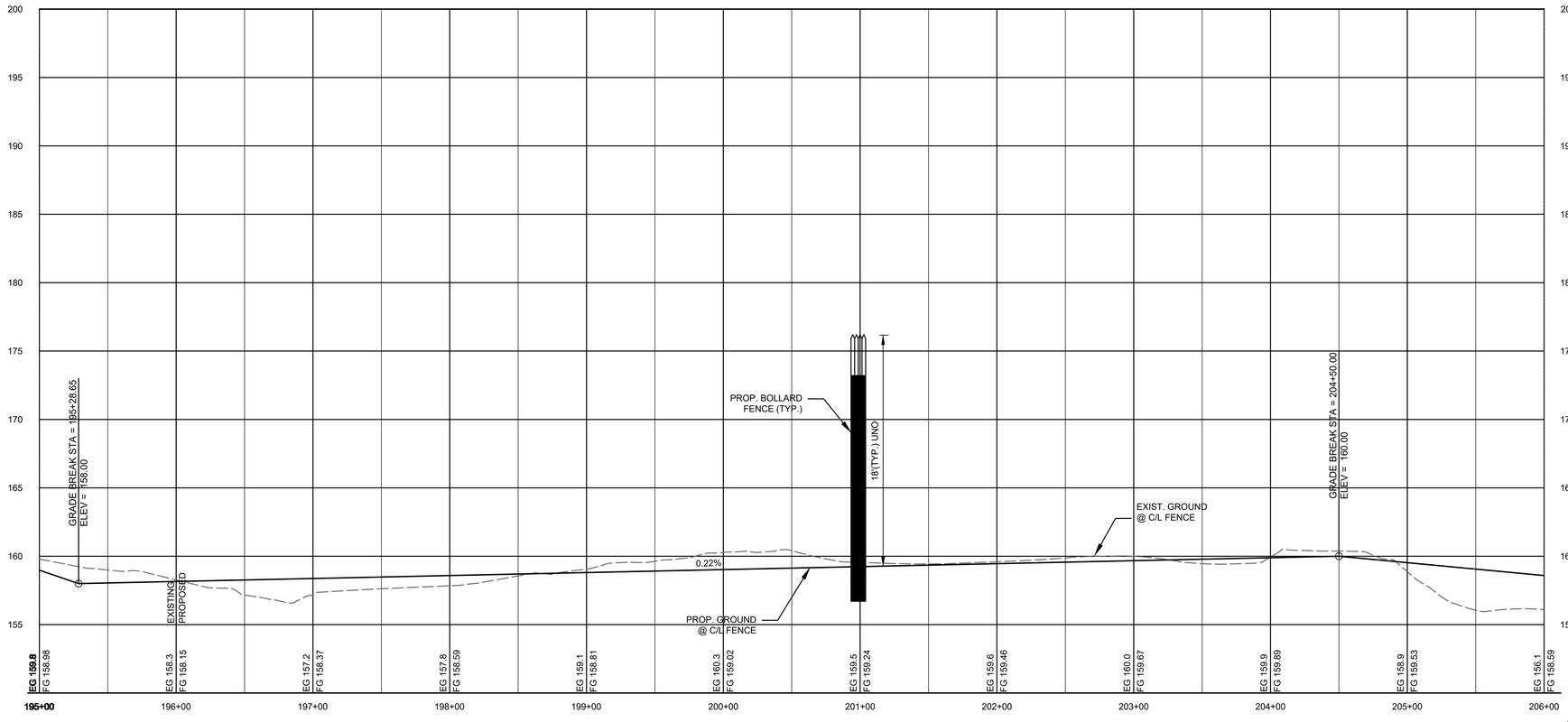
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 184+00.00 - 195+00.00

SHEET ID
ROMA
C-117




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

1' = 50' - 0" 1' = 5' - 0"

## GENERAL NOTES

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US Army Corps of Engineers ®

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17218 PRESTON RD., SUITE 3300
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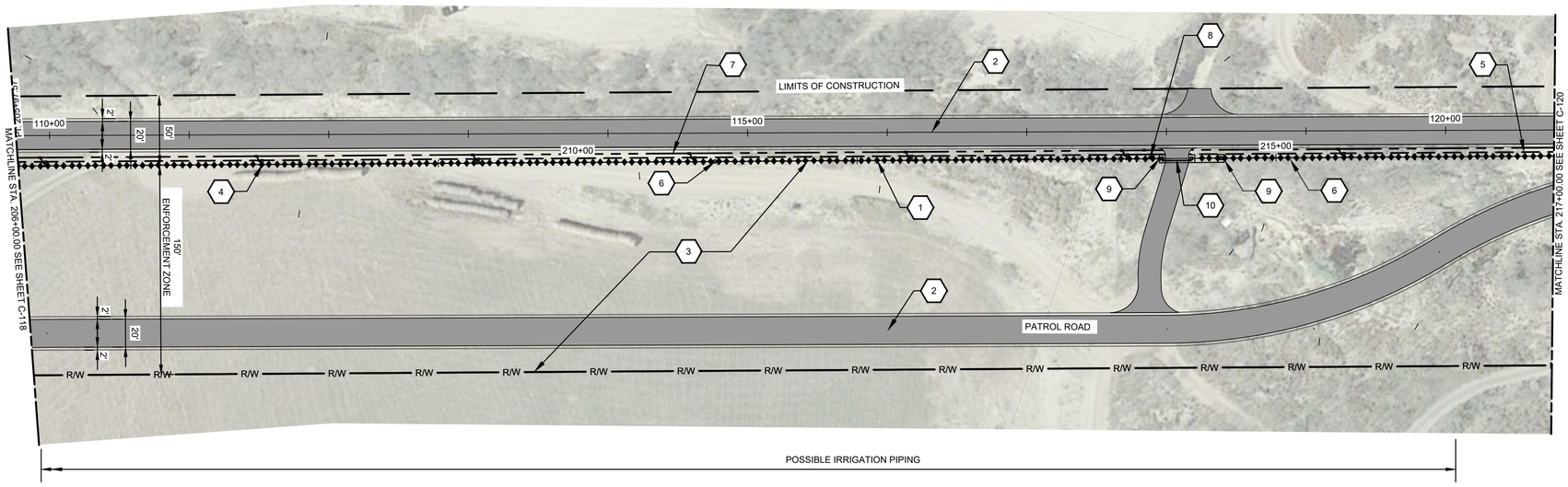
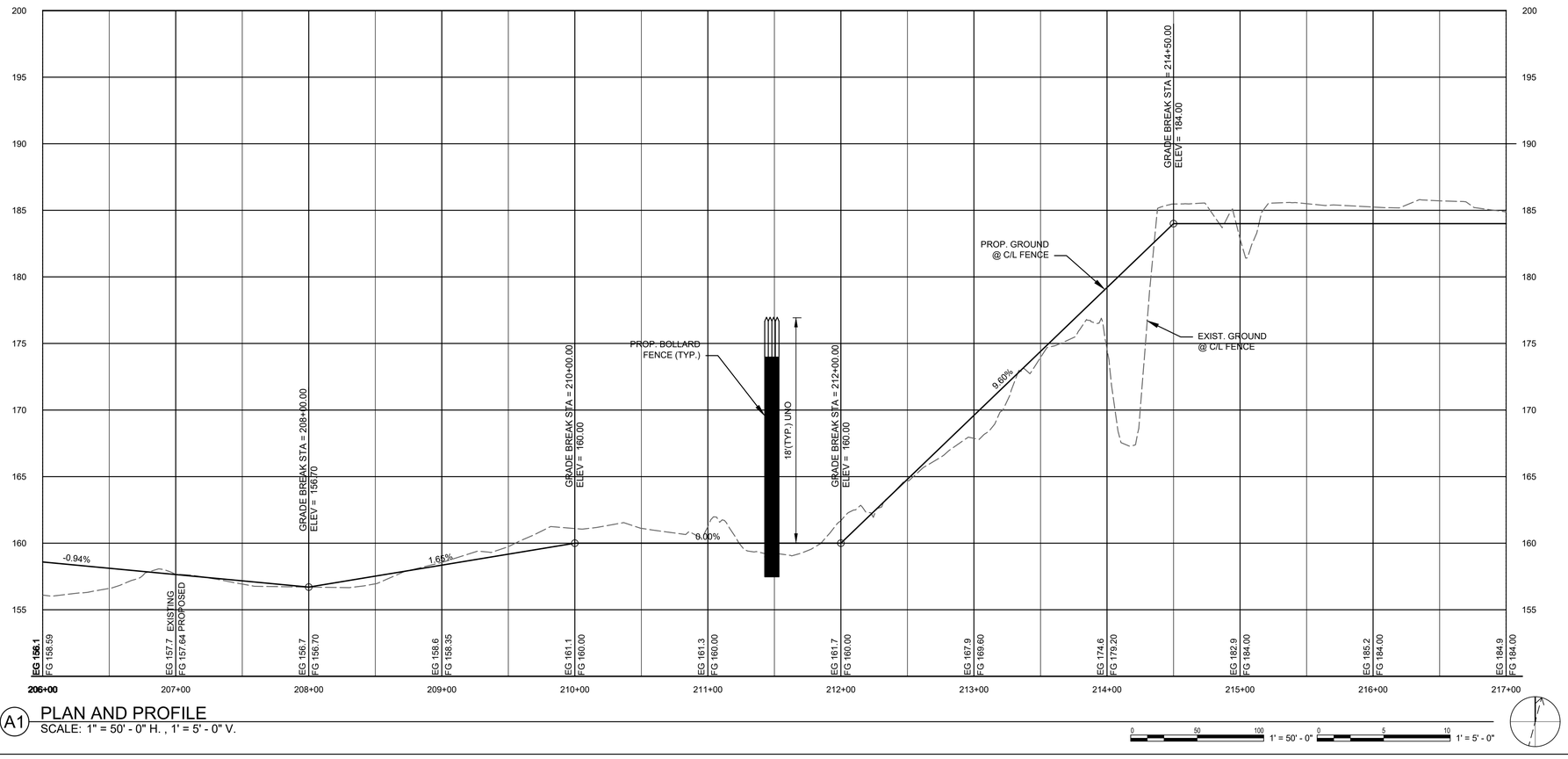
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 195+00.00 - 206+00.00

SHEET ID
ROMA
C-118

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US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
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ETEGRA
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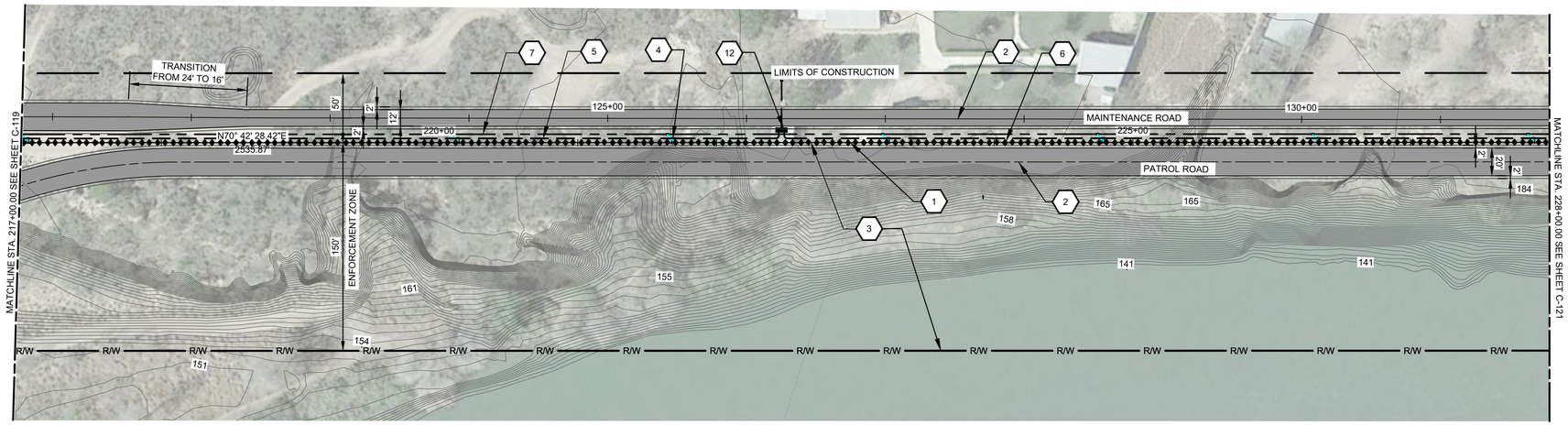
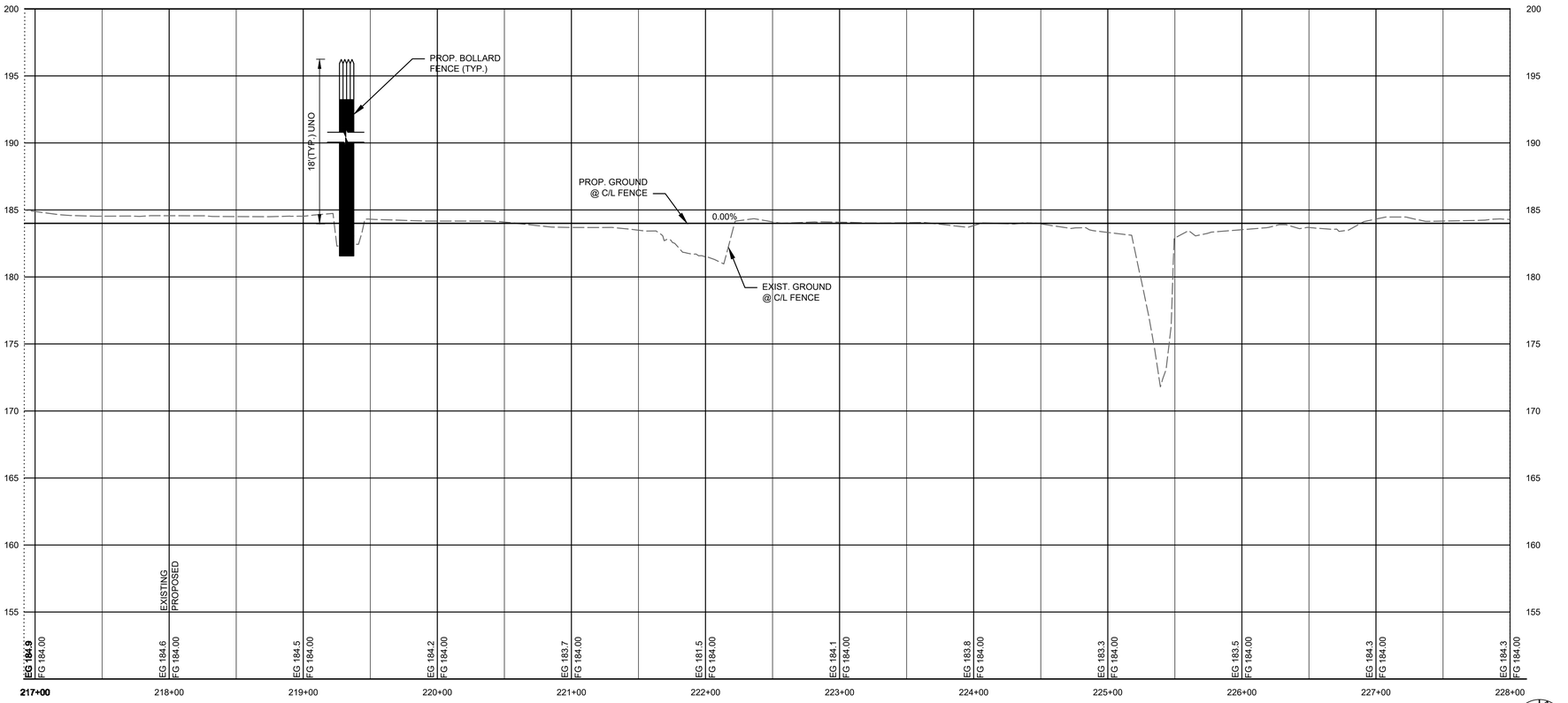
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 206+00.00 - 217+00.00

SHEET ID
ROMA
C-119

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US Army Corps of Engineers ®

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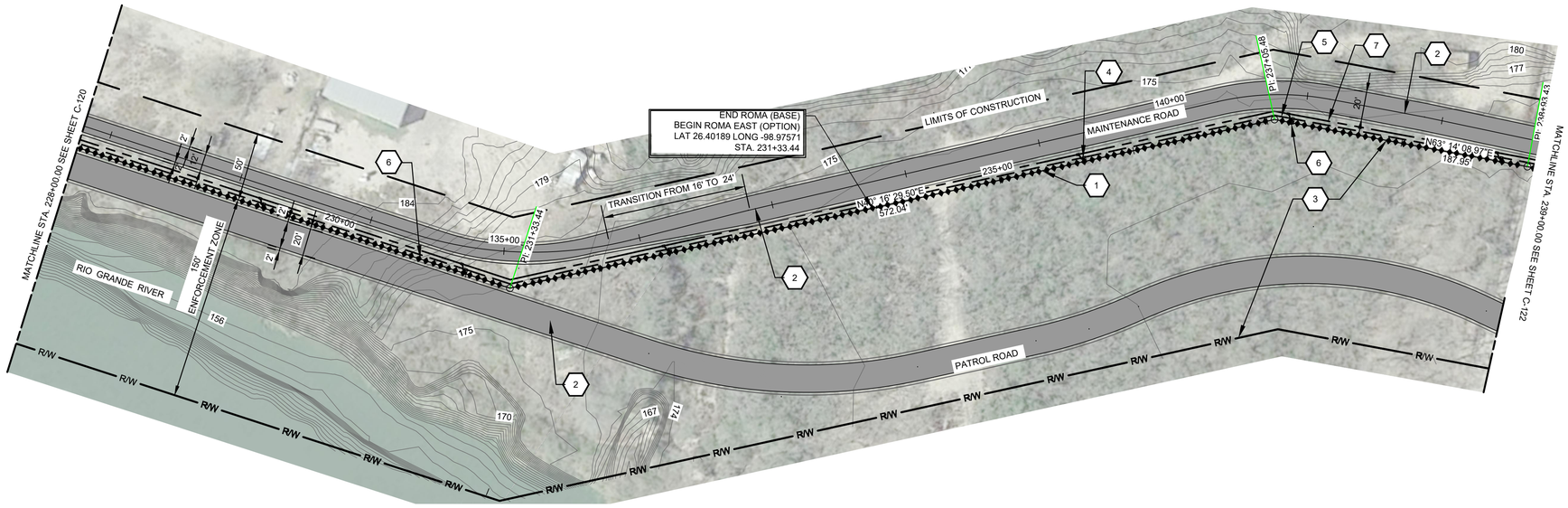
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

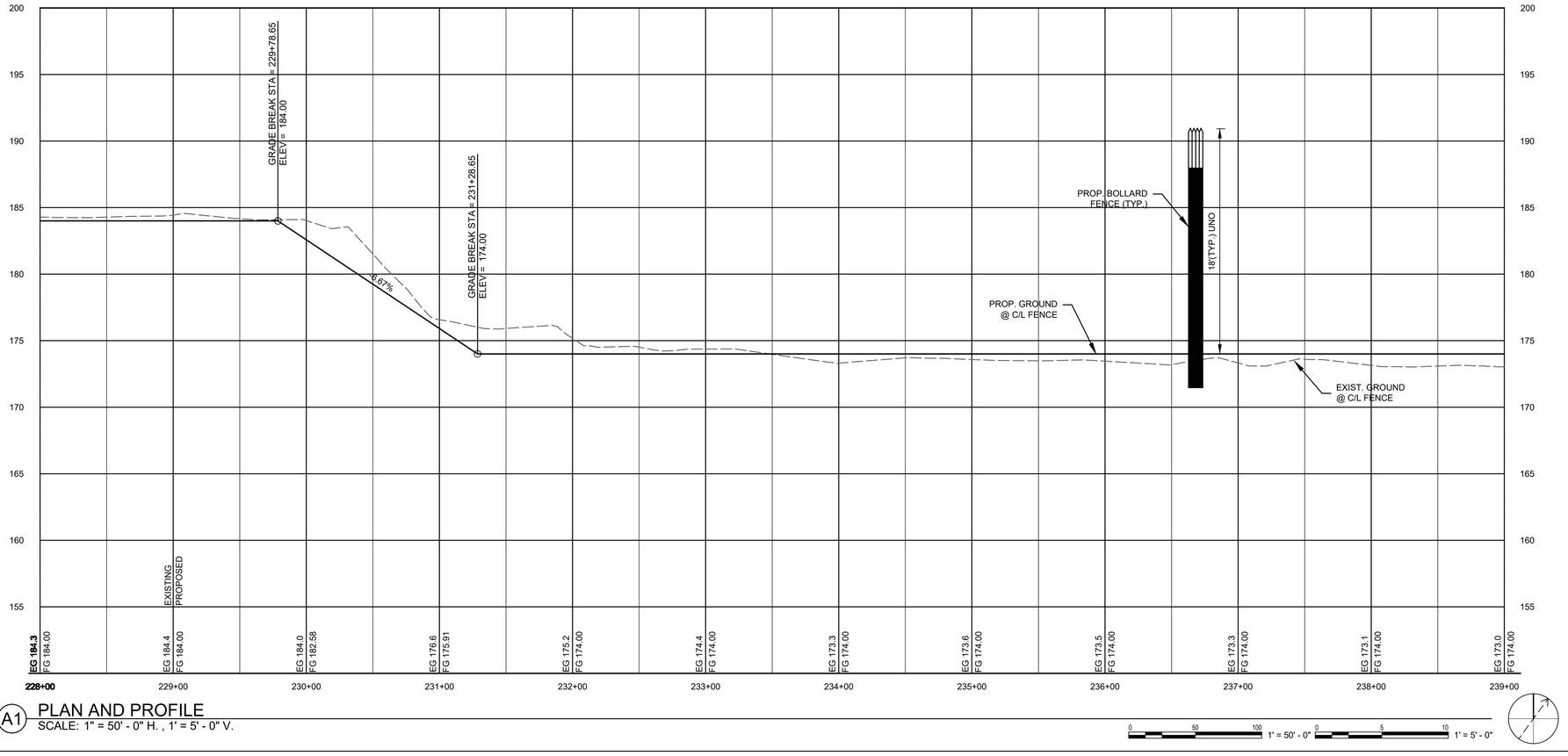
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 217+00.00 - 228+00.00

SHEET ID
ROMA
C-120




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

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US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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SOLICITATION NO.:
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DESIGNED BY: X
DRAWN BY: X
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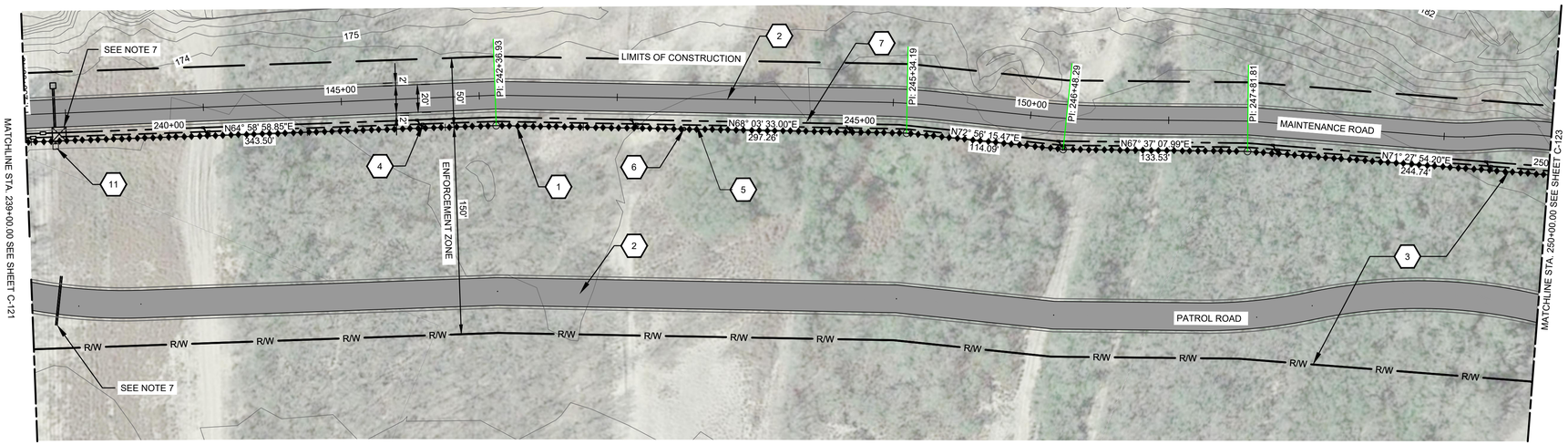
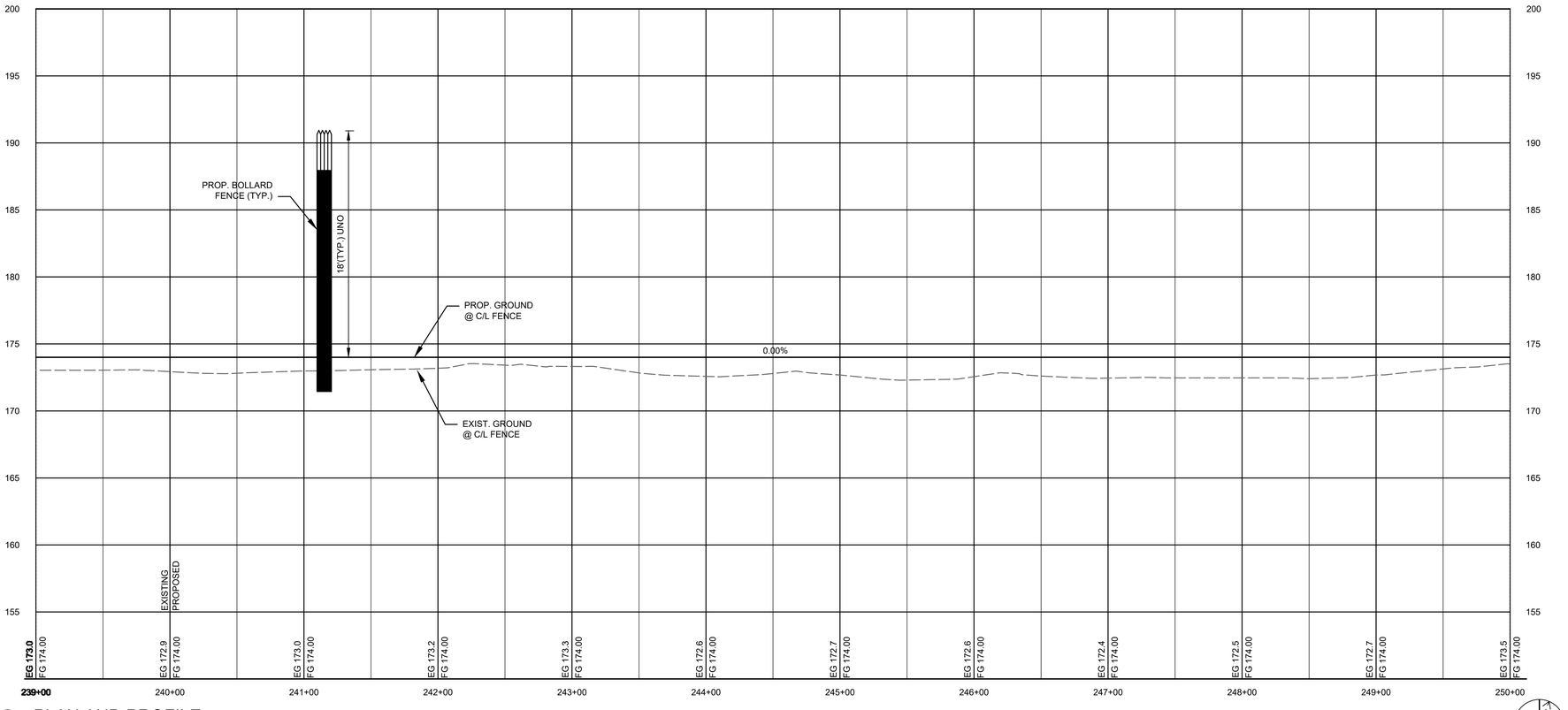
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE
PLAN AND PROFILE
STA. 228+00.00 - 239+00.00

SHEET ID
ROMA
C-121

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7. SEE SHEET E-502 FOR TYPICAL PLAN VIEW AT RVSS TOWER .

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US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
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ETEGRA
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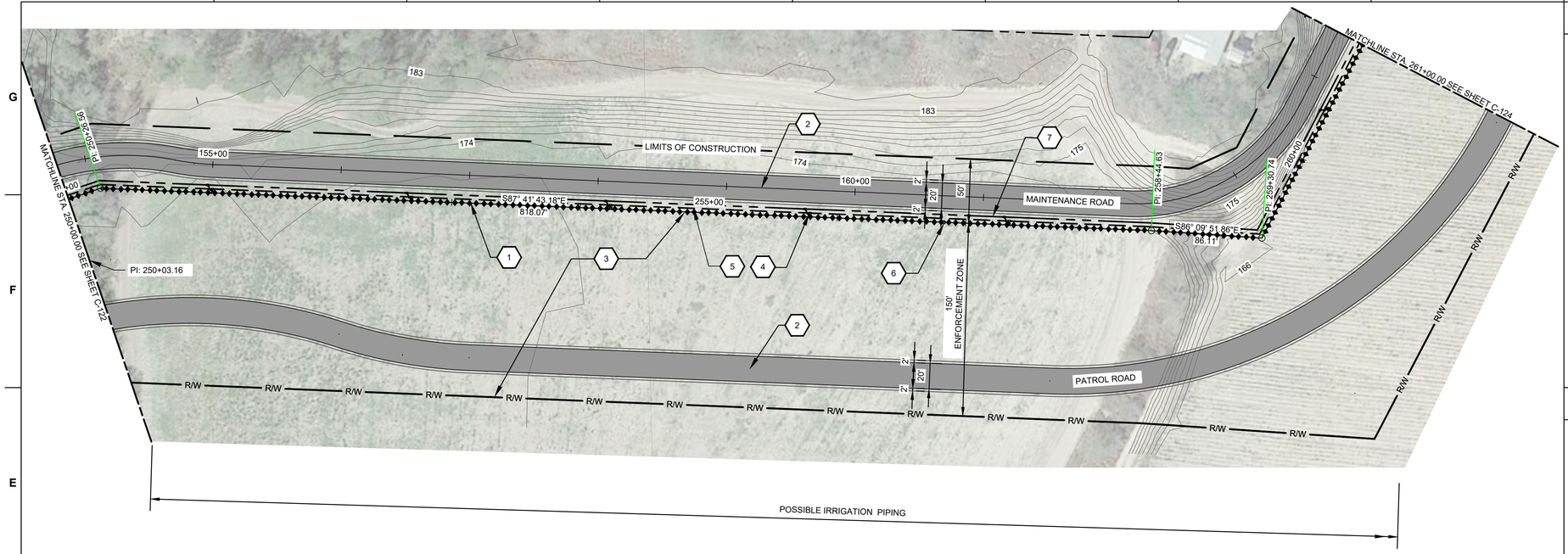
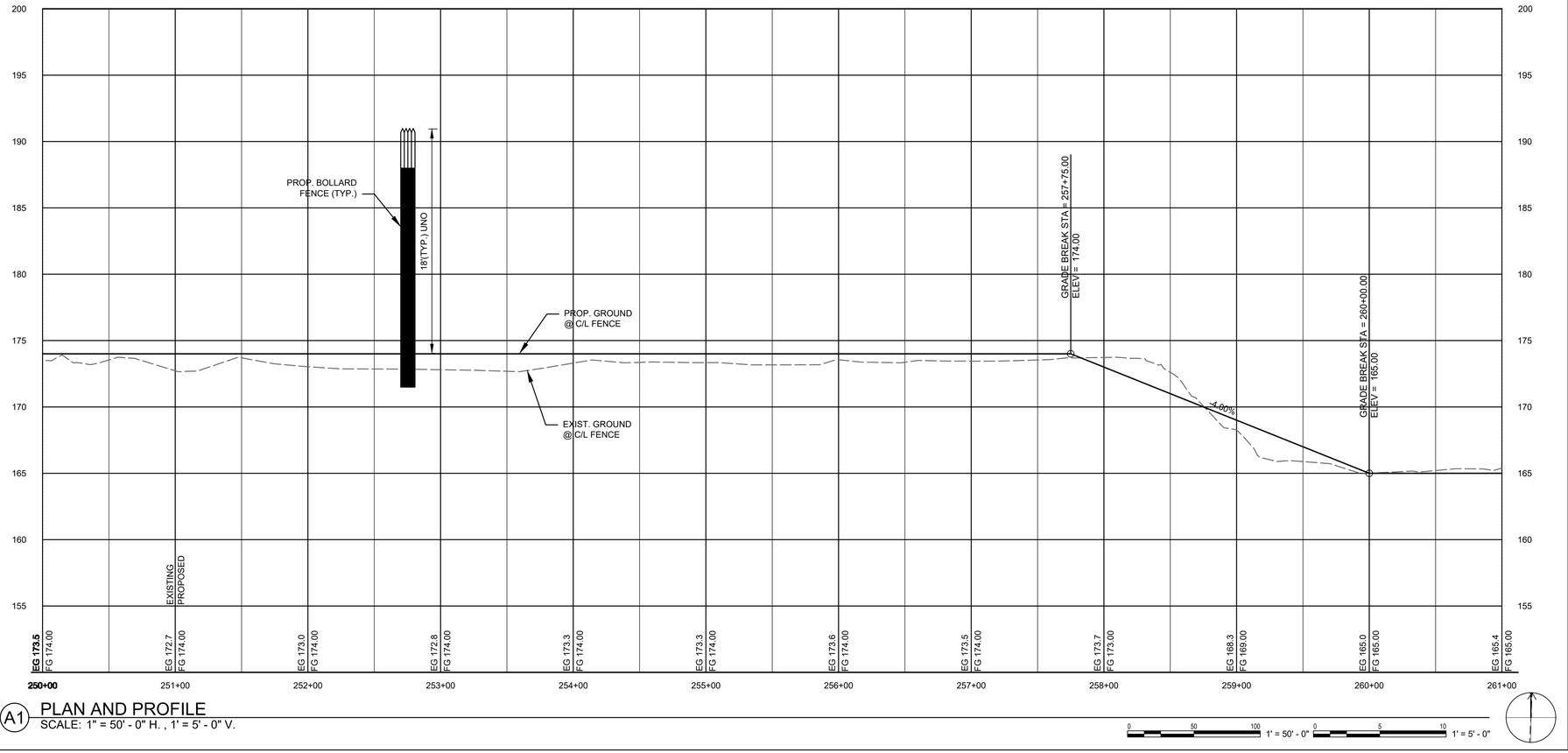
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 239+00.00 - 250+00.00

SHEET ID
ROMA
C-122

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SHEET ID
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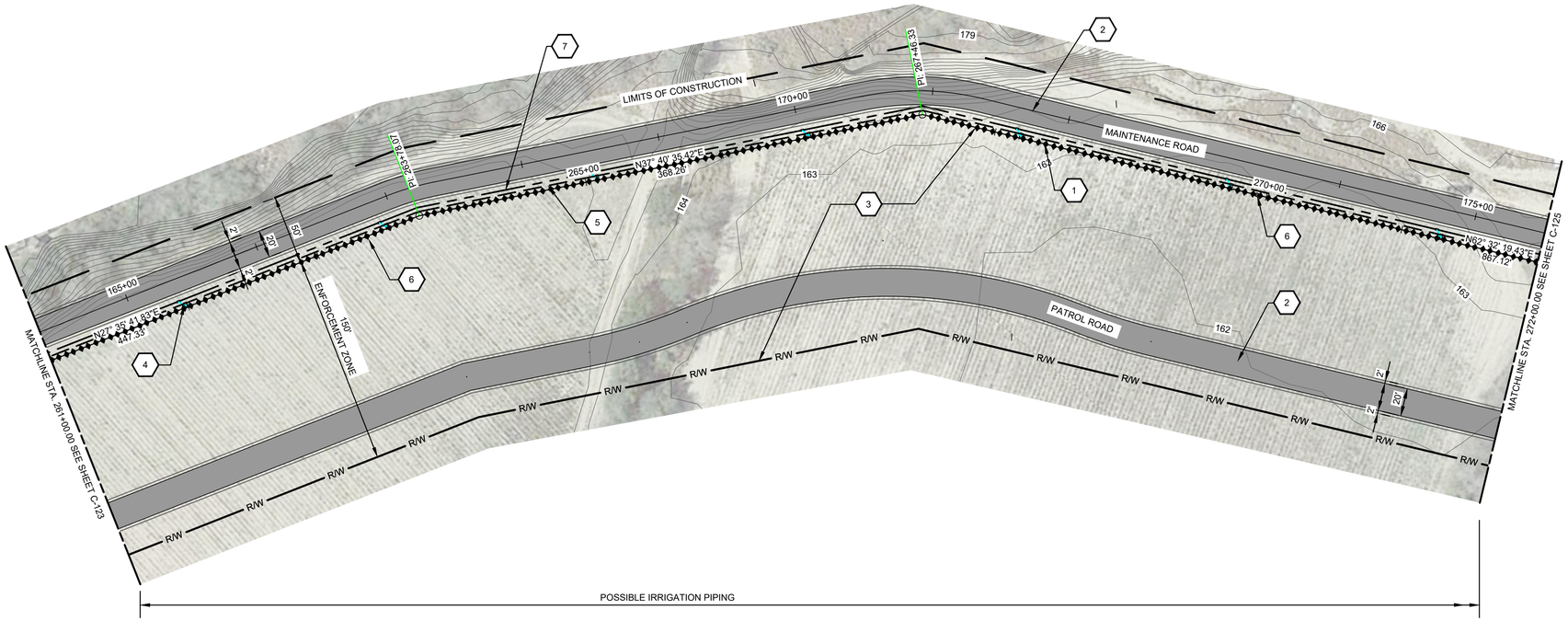


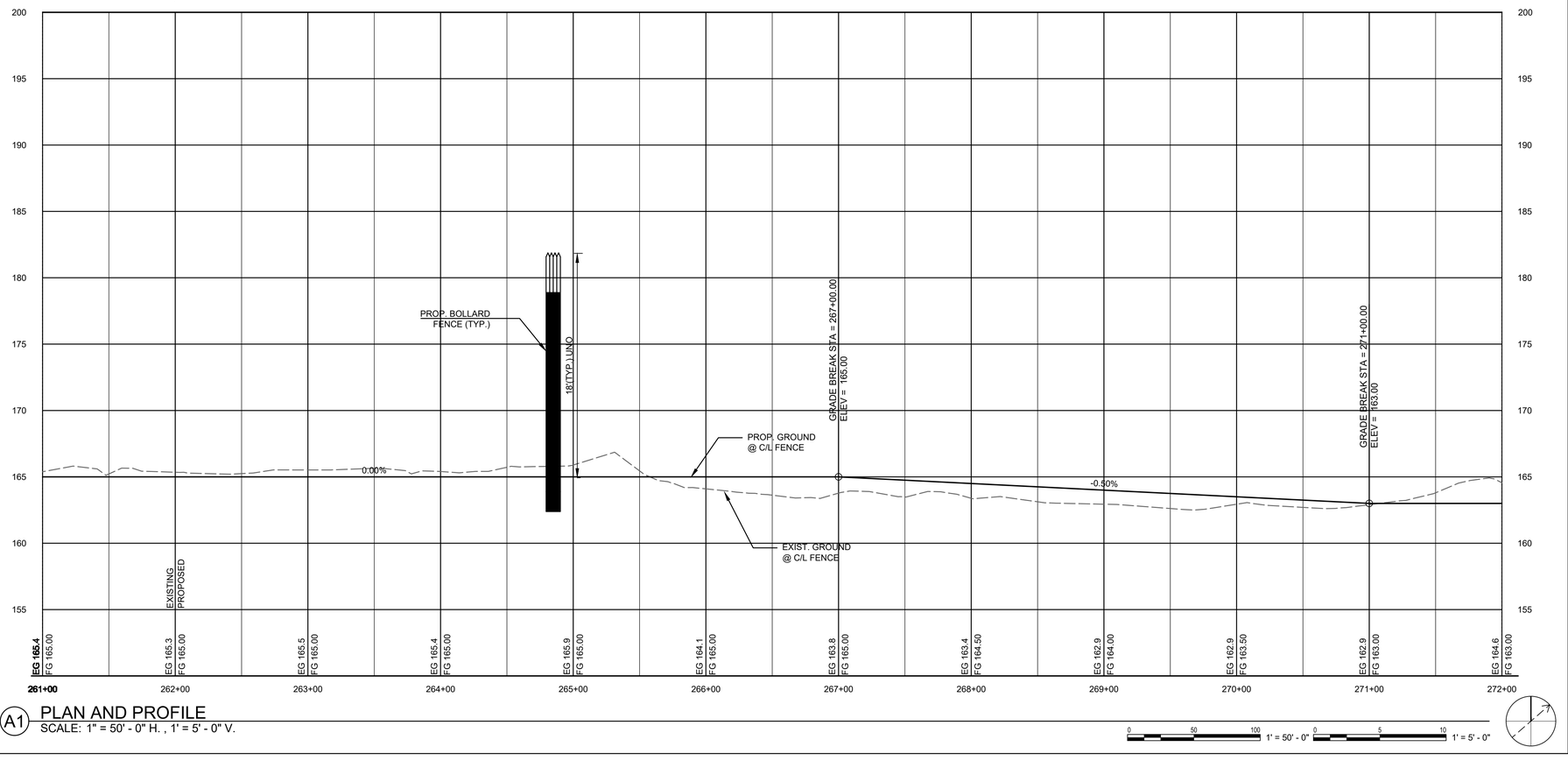


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SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

1' = 50' - 0"  1' = 5' - 0"

## GENERAL NOTES

1. THIS SHEET IS AT 35% CONCEPT DESIGN AND NOT TO BE USED FOR CONSTRUCTION.
2. CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL GEOTECHNICAL TESTING, TOPOGRAPHIC MAPPING, DESIGN, SURVEY STAKE-OUT, ABOVE AND BELOW GROUND UTILITY IDENTIFICATIONS AND REQUIRED RELOCATIONS, AND REMOVAL AND PROPER DISPOSAL OF STRUCTURES, DEBRIS, ETC. LOCATED WITHIN THE ENFORCEMENT ZONE.
3. CONTRACTOR SHALL ENSURE THAT ALL DESIGNS MEET TACTICAL INFRASTRUCTURE STANDARDS, LATEST EDITION.
4. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES, IRRIGATION CULVERTS AND DRAINAGE STRUCTURES, AND ADJUST/RELOCATE AS REQUIRED TO DE-CONFLICT WITH THE PROPOSED BOLLARD FENCE AND ENFORCEMENT ZONE (I.E.: EX. IRRIGATION VALVES TO BE RELOCATED TO NORTH LEVEE EMBANKMENT).
5. CONTRACTOR SHALL DESIGN AND INSTALL ALL DRAINAGE SYSTEMS FOR THIS PROJECT.
6. LIGHTING LOCATIONS ARE CONCEPTUAL. CONTRACTOR TO PROVIDE FINAL LIGHTING COMPUTATIONS AND LOCATIONS.

## XX KEYNOTES

1. PROPOSED NEW TYPE P-3 BOLLARD FENCE.
2. PROPOSED TYPE FC-2 AGGREGATE ALL-WEATHER ROAD.
3. CLEAR VEGETATION AND GRADE WITHIN ENFORCEMENT ZONE.
4. PROPOSED LIGHT POLE, PULLBOX, AND LIGHTING - SEE ELEC. FOR LOCATIONS. (TYP.)
5. PROPOSED POWER AND LIGHTING DISTRIBUTION CABLE AND CONDUIT/DUCTBANK.
6. PROPOSED FENCE GROUNDING LOCATIONS.
7. PROPOSED COMMUNICATION CONDUIT/ DUCTBANK. (CABLE FUTURE BY OTHERS)
8. GATE ELECTRICAL DISTRIBUTION EQUIPMENT.
9. GATE GROUNDING LOCATIONS.
10. PROPOSED MOTORIZED VEHICLE SLIDE GATE.
11. PROPOSED RVSS SITE.
12. CONCEPTUAL ELECTRICAL UTILITY CONNECTION POINT.
13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|

DESIGNED BY: X
DRAWN BY: X
CHECKED BY: X
SUBMITTED BY: X
ISSUED DATE:
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
SIZE: ANSI D

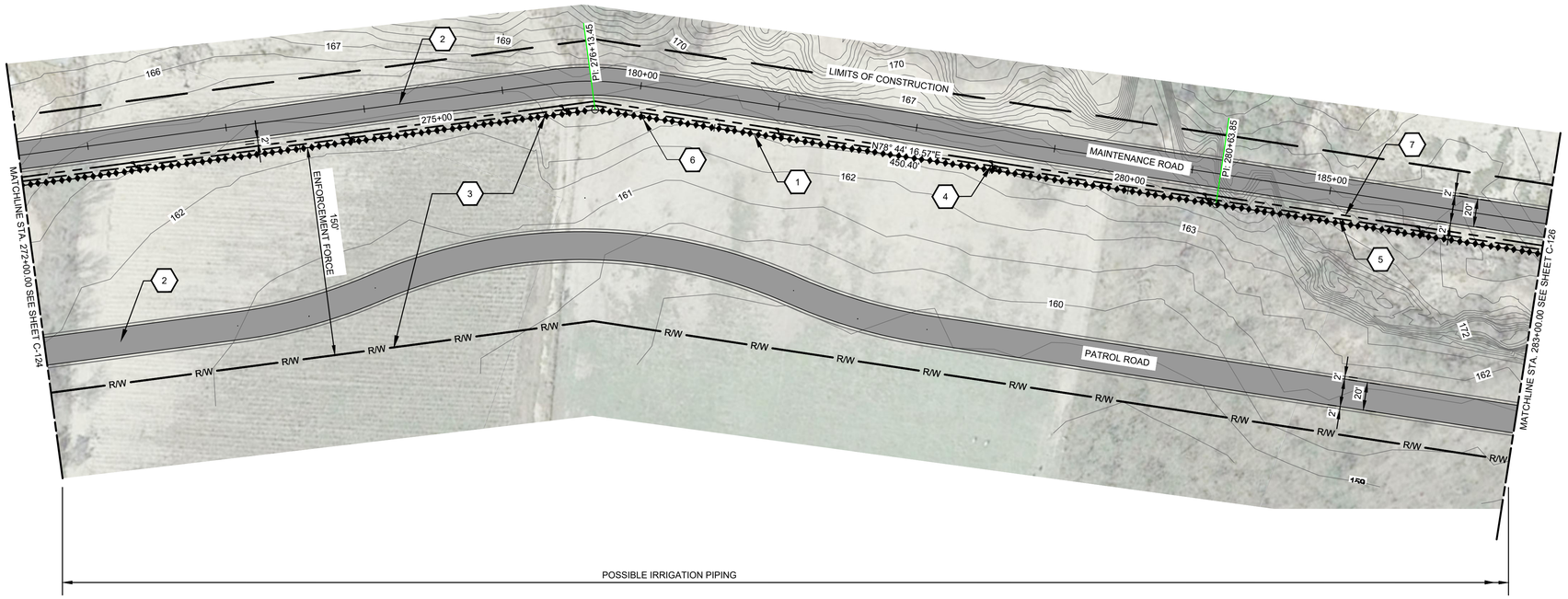
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

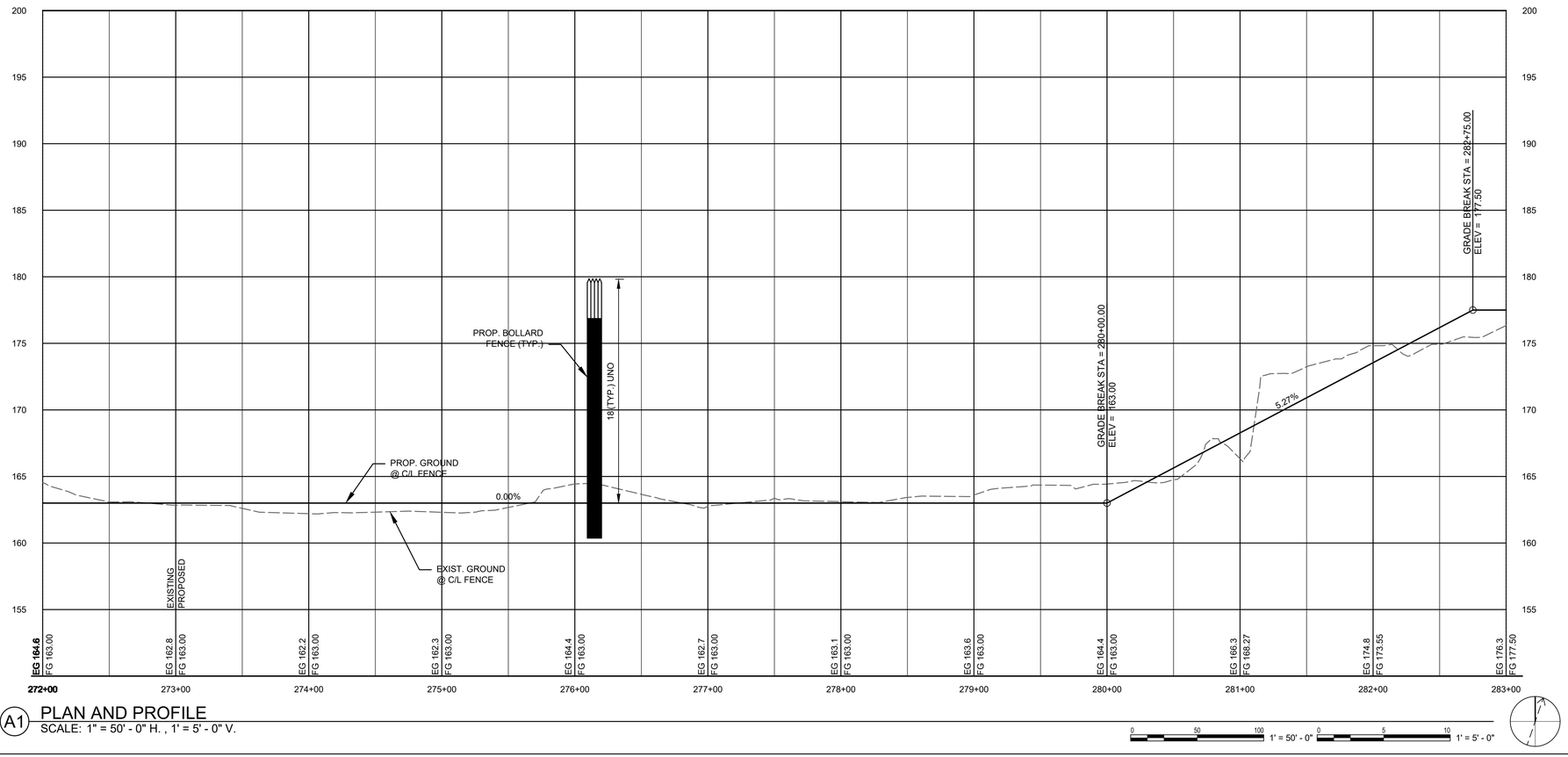
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 261+00.00 - 272+00.00

SHEET ID
ROMA
C-124




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

0 50 100 1' = 50' - 0"  0 5 10 1' = 5' - 0"

## GENERAL NOTES

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11. PROPOSED RVSS SITE.
12. CONCEPTUAL ELECTRICAL UTILITY CONNECTION POINT.
13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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DRAWN BY: X
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SUBMITTED BY: X
ISSUED DATE:
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
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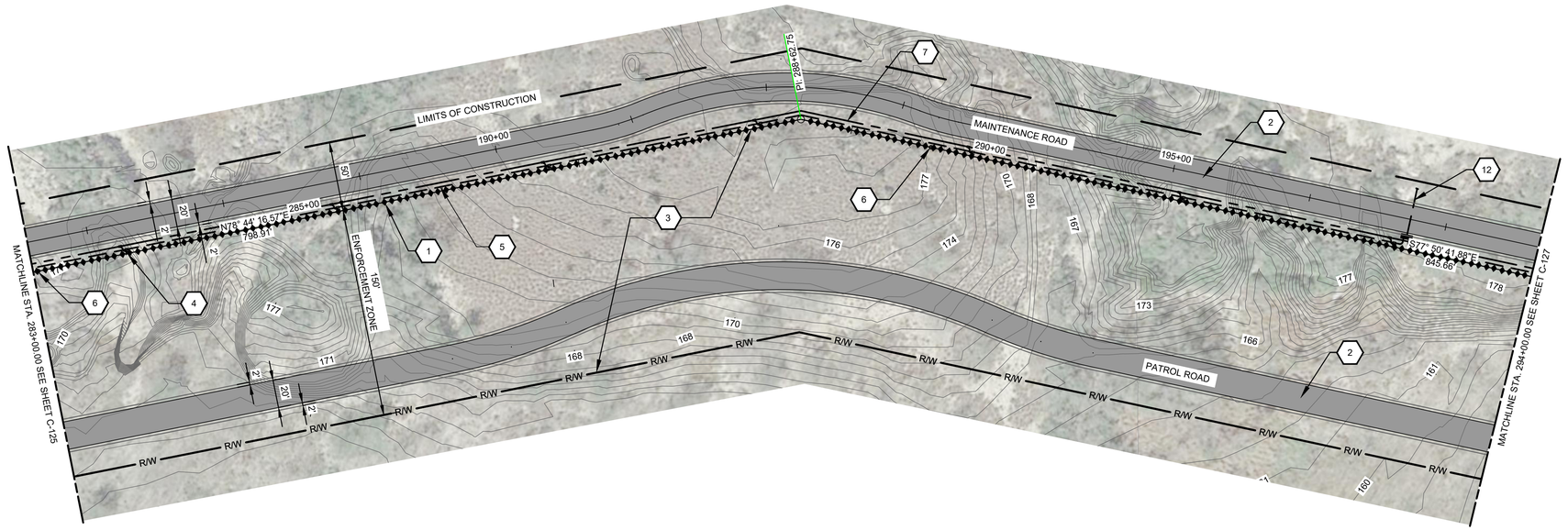
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

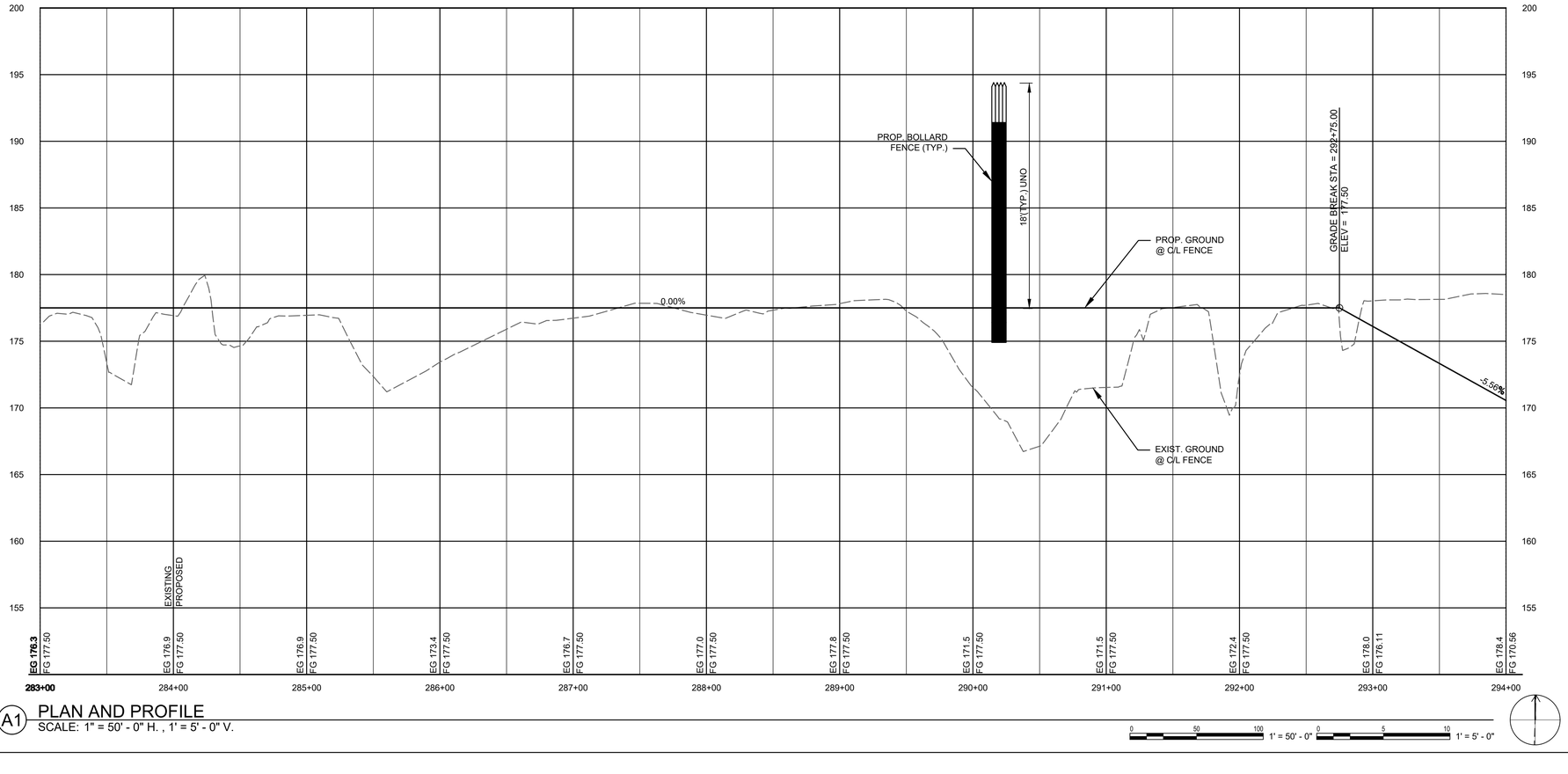
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 272+00.00 - 283+00.00

SHEET ID
ROMA
C-125




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

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US Army Corps of Engineers ®

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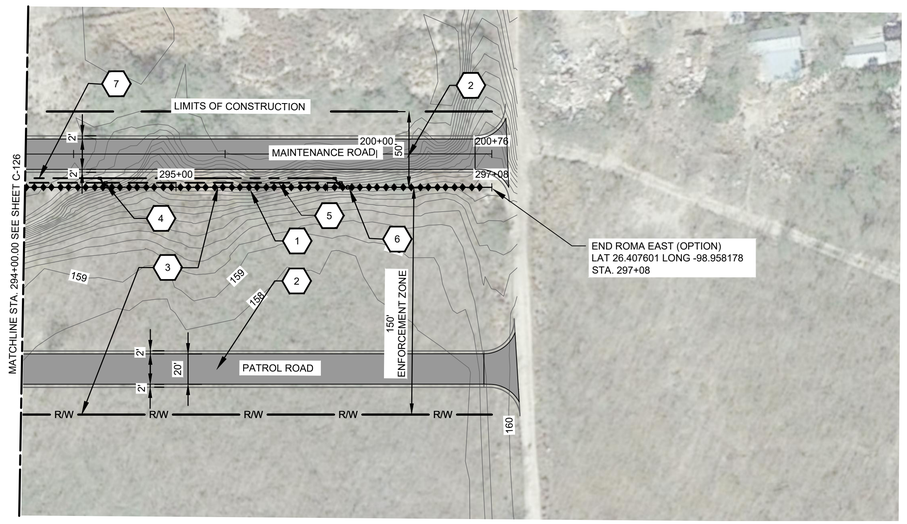
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

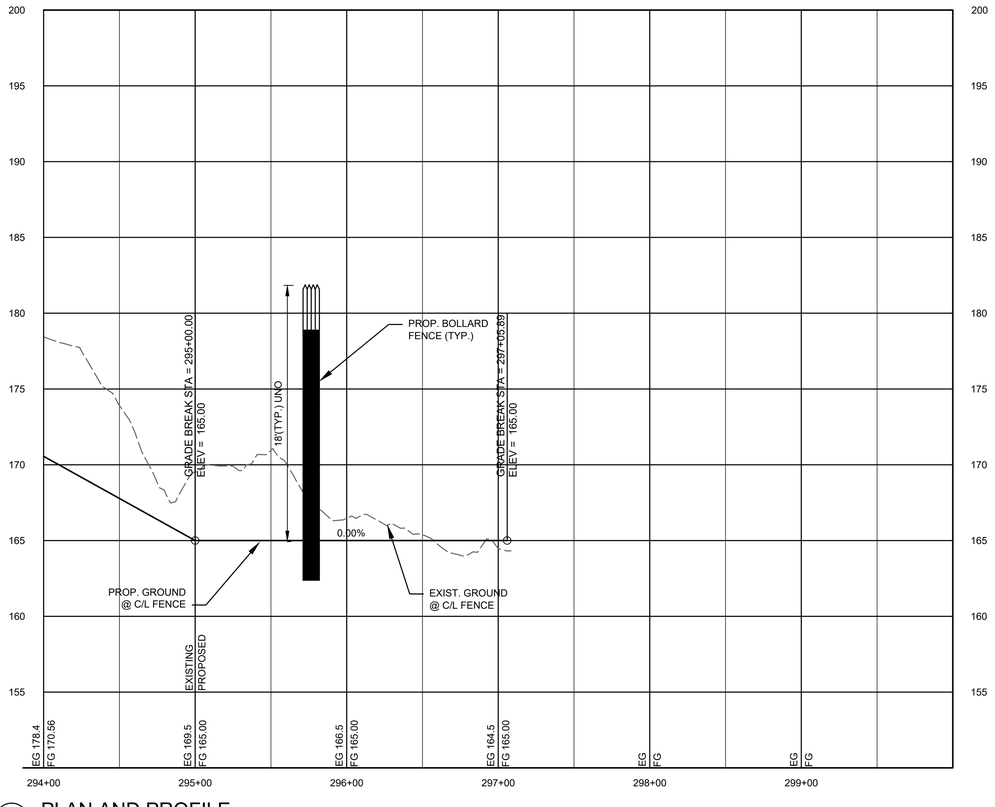
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 283+00.00 - 294+00.00

SHEET ID
ROMA
C-126




A1 PLAN AND PROFILE
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US Army Corps of Engineers ®

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SUBMITTED BY: X
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CONTRACT NO.:
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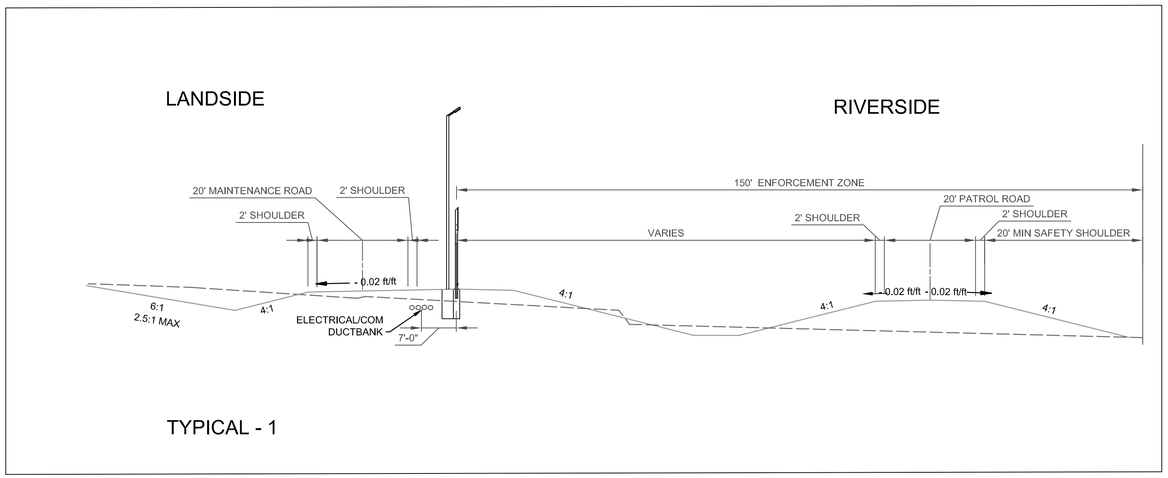
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE
PLAN AND PROFILE
STA. 294+00.00 - 299+27.24

SHEET ID
ROMA
C-127

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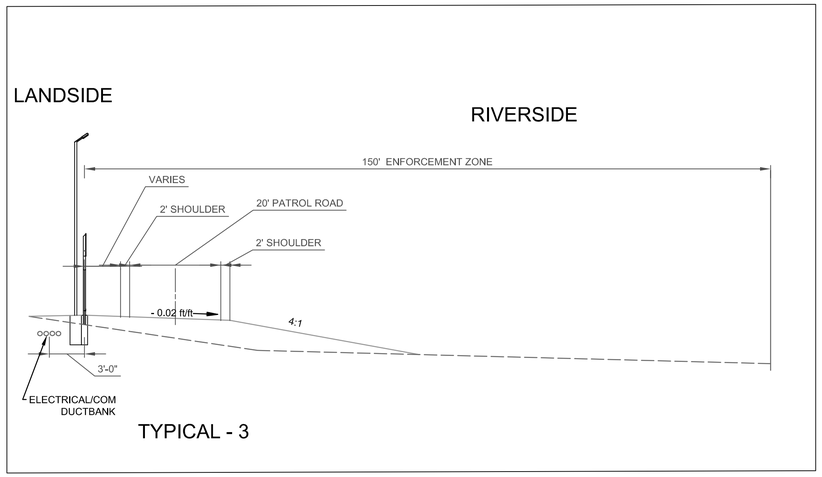


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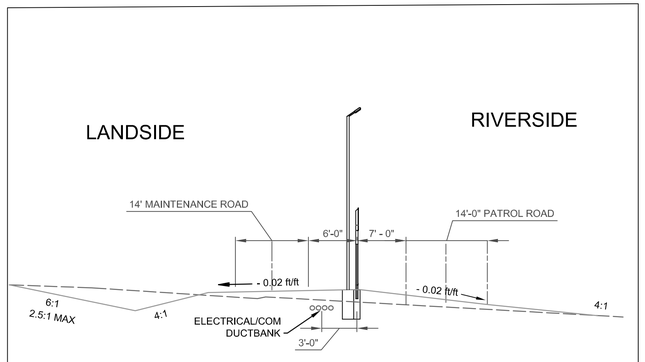


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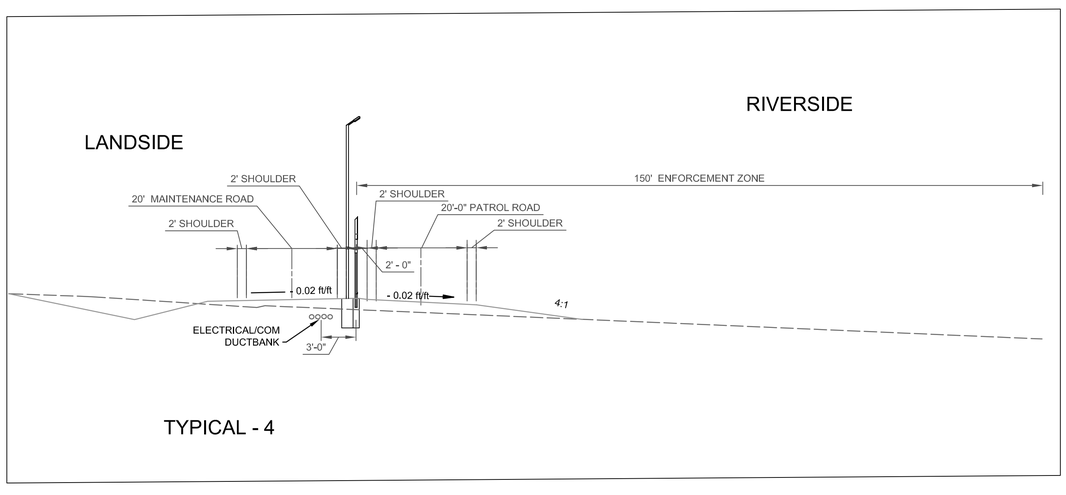


TYPICAL - 4

A1 TYPICAL CROSS SECTIONS
SCALE: 1" = 200'

US Army Corps of Engineers ®

| DATE | DESCRIPTION | MARK |
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| SOLICITATION NO: | | | |
| CONTRACT NO.: | | | |
| FILE NUMBER: | | | |
| DESIGNED BY: X | SUBMITTED BY: X | | |
| DRAWN BY: X | SIZE: ANSI D | | |
| CHECKED BY: X | | | |

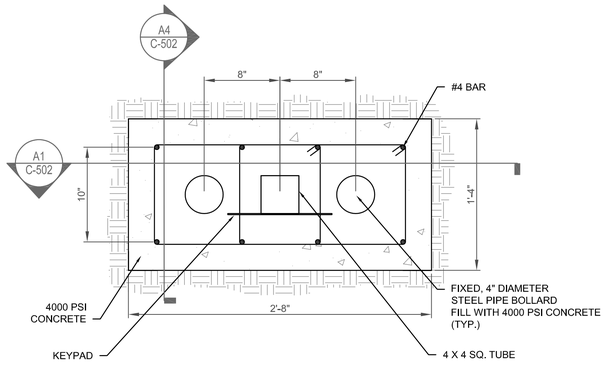
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 5300
DALLAS, TX, 75252

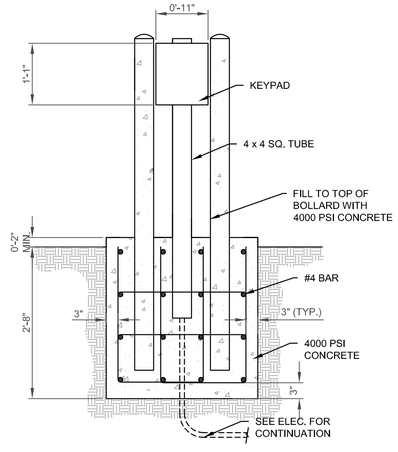
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

TYPICAL CROSS SECTION

SHEET ID
ROMA
C-301




D1 KEYPAD MOUNTING DETAIL
SCALE: N.T.S.




A1 KEYPAD MOUNTING DETAIL
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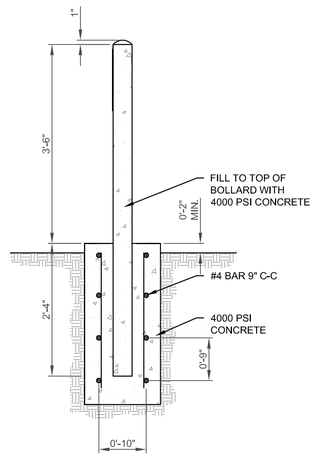


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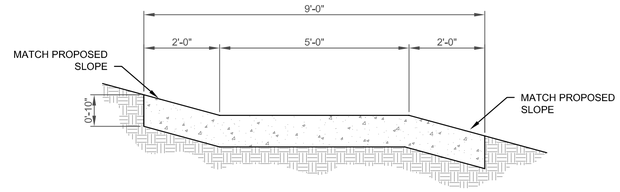
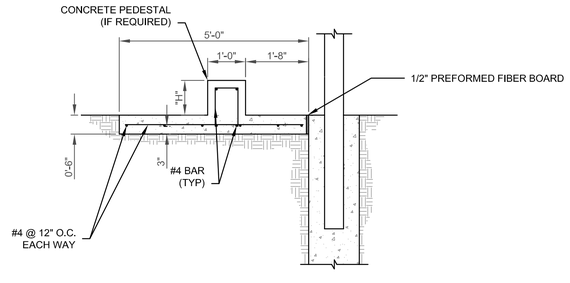



C6 10" CONCRETE ROAD CROSSING SLAB
SCALE: N.T.S.




A6 6" CONCRETE SLAB
SCALE: N.T.S.

## GENERAL NOTES

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|

DESIGNED BY: B.PRESTON
DRAWN BY: B.DUNNE
CHECKED BY: B.PRESTON
SUBMITTED BY: B.PRESTON
SIZE: ANSI D
ISSUED DATE:
SOLICITATION NO:
CONTRACT NO.:
FILE NUMBER:

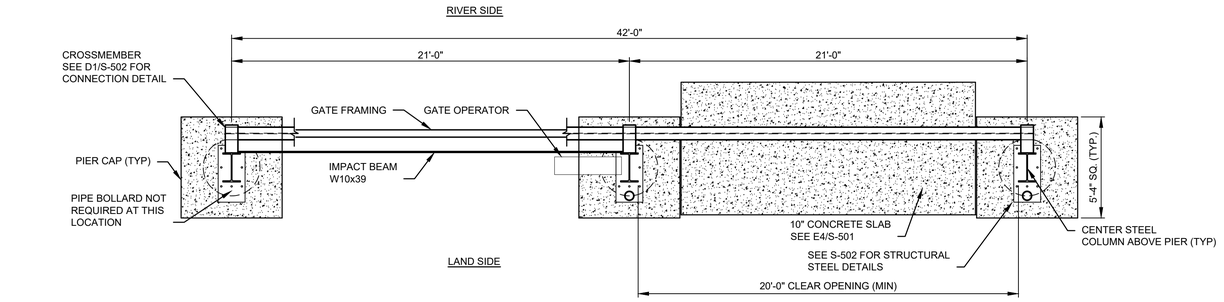
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17216 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

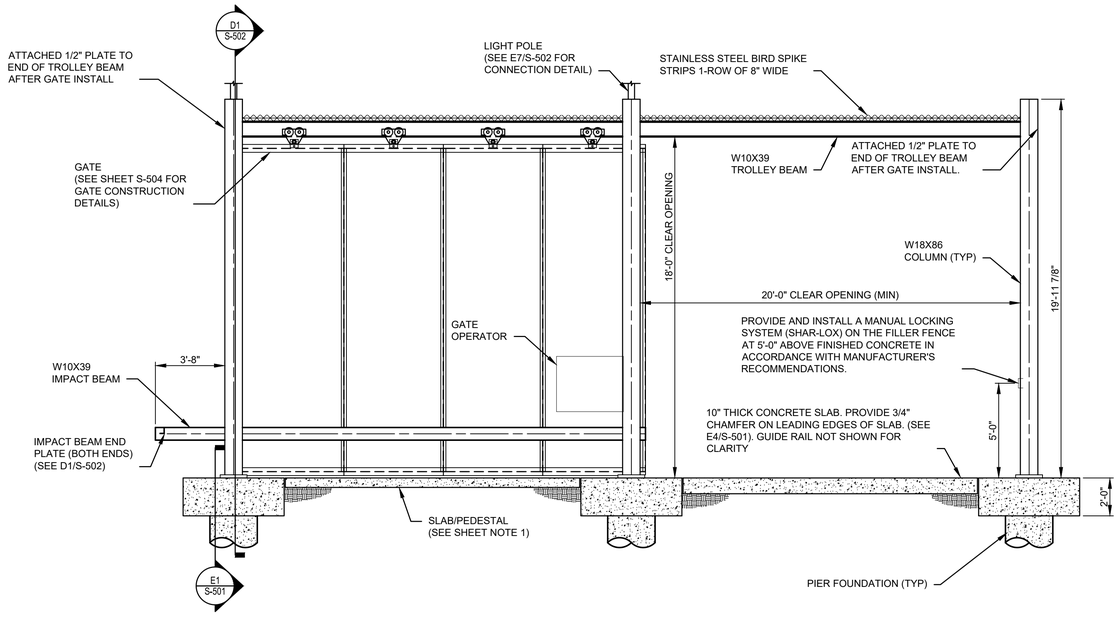
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

# ROAD CROSSING AND KEYPAD MOUNT DETAILS

SHEET ID
ROMA
C-501




E2 PLAN - 20 FT. AUTOMATED GATE
SCALE: N.T.S.




A2 ELEVATION - 20 FT. AUTOMATED GATE (LOOKING TOWARD RIVER SIDE)
SCALE: N.T.S.

## GENERAL NOTES

1. FOR BASE PLATE AND BOLT DETAIL REFER TO DRAWING S-501 AND S-502.
2. FOR GATE OPERATOR PLATFORM REFER TO DRAWING S-503.
3. PROVIDE STEEL PLATES, WELDED TO TOP OF COLUMNS #1 AND #2 AND BOLTED TO THE LIGHT POST BASEPLATE. SEE DETAIL E7/S-502 FOR DETAILS.
4. ANY GAP BETWEEN FENCE AND GATE SHALL BE NO MORE THAN 4".
5. EARTHWORK SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 31 00 00.
6. INSTALL 1 1/2" DIA GALVANIZED STEEL LADDER TO ACCESS GATE OPERATOR. LADDER RUNGS SHALL BE EQUALLY SPACE (8") 1" SQ GALVANIZED STEEL BARS WITH NON-SLIP TREATMENT ON TOP OF EACH RUNG. PAINT WELDED SURFACES WITH A CORROSION PROTECTIVE COATING AS NEEDED.
7. MINIMUM LADDER OPENING IS 16" IN WIDTH.

## SHEET NOTES

1. SEE SHEET C-501 FOR CROSSING SLAB INFORMATION.
2. SEE SHEET C-501 FOR 6" CONCRETE SLAB INFORMATION.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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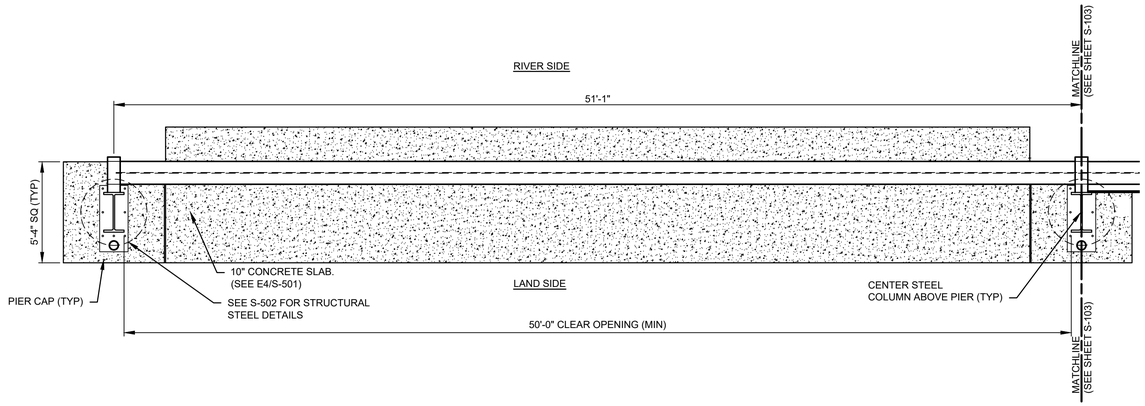
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

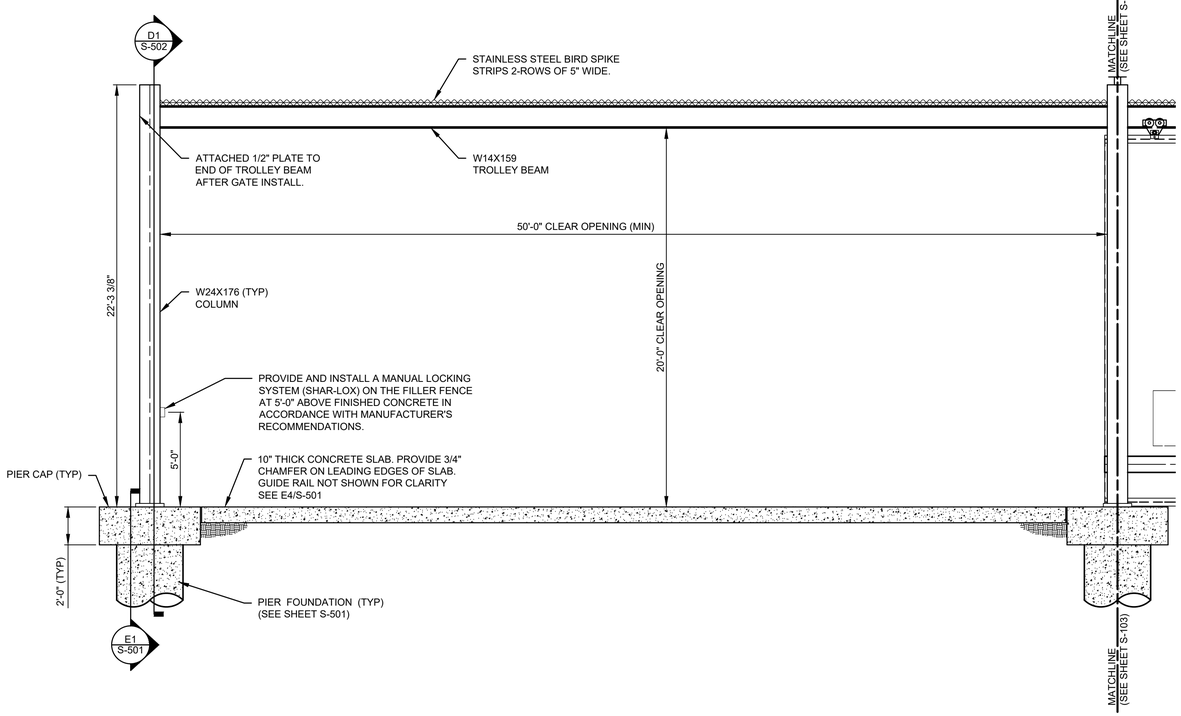
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND ELEVATION
20 FT. GATE

SHEET ID
ROMA
S-101




E2 PLAN - 50 FT. AUTOMATED GATE
SCALE: N.T.S




A2 ELEVATION - 50 FT. AUTOMATED GATE (LOOKING TOWARD RIVER SIDE)
SCALE: N.T.S

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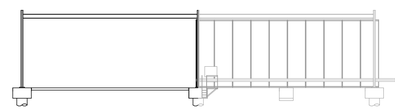
## SHEET NOTES

1. SEE SHEET C-501 FOR CROSSING SLAB INFORMATION.

## KEYPLAN



US Army Corps of Engineers ®

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| SUBMITTED BY: | X |
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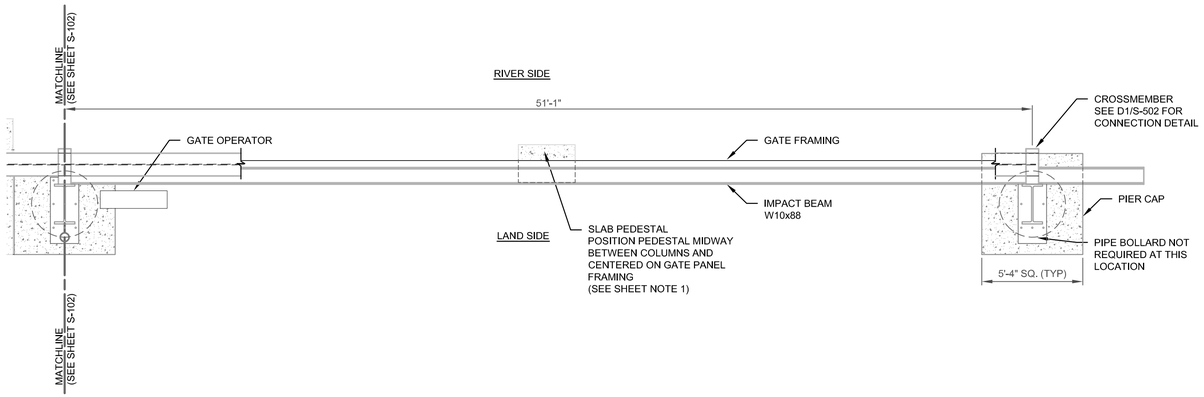
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

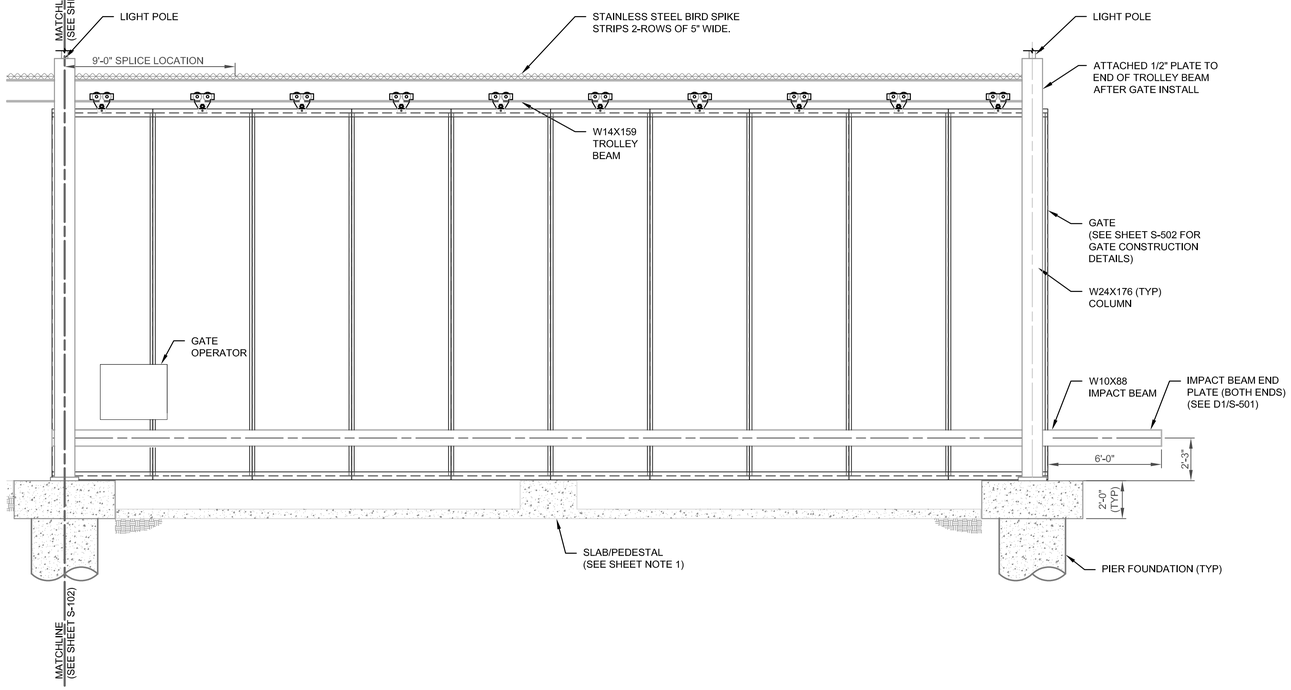
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND ELEVATION
50 FT. GATE

SHEET ID
ROMA
S-102




E2 PLAN - 50 FT. AUTOMATED GATE
SCALE: N.T.S.




A2 ELEVATION - 50 FT. AUTOMATED GATE (LOOKING TOWARD RIVER SIDE)
SCALE: N.T.S.

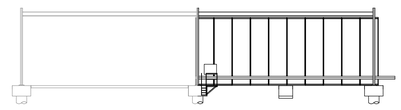
## GENERAL NOTES

1. SEE S-102.

## SHEET NOTES

1. SEE SHEET C-501 FOR SLAB PEDESTAL INFORMATION WHERE REQUIRED.

## KEYPLAN



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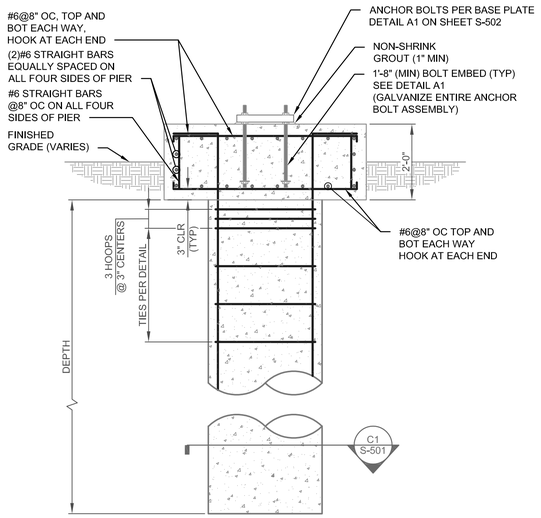
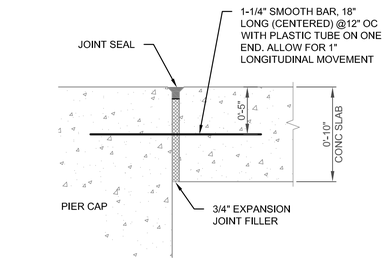
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND ELEVATION
50 FT. GATE

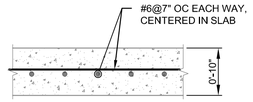
SHEET ID
ROMA
S-103




E1 PIER FOUNDATION / PILE CAP REINFORCING DETAIL
SCALE: N.T.S.




F4 SLEEVED EXPANSION JOINT
SCALE: N.T.S.




E4 CONCRETE SLAB REINFORCING
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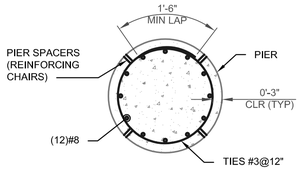
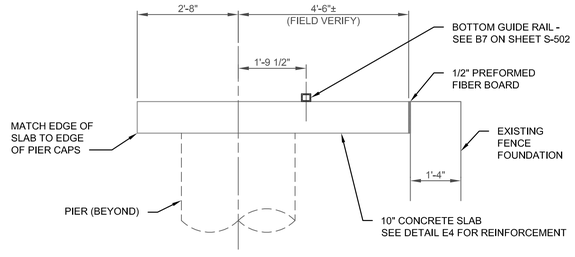
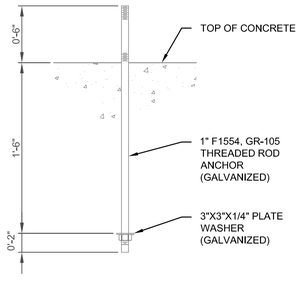



C1 PIER FOUNDATION SECTION
SCALE: N.T.S.




C4 CONCRETE SLAB SIZING DETAIL
SCALE: N.T.S.




A1 ANCHOR BOLT DETAIL
SCALE: N.T.S.

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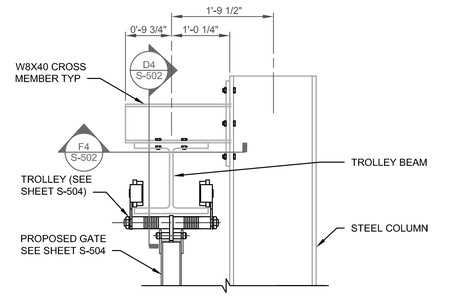
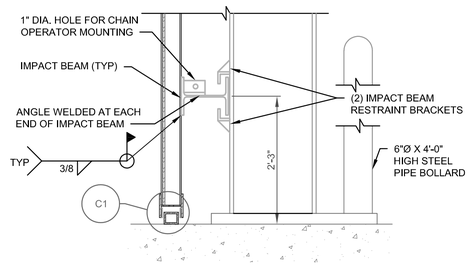
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

CONCRETE DETAILS

SHEET ID
ROMA
S-501




## D1 STRUCTURAL COLUMN SECTION
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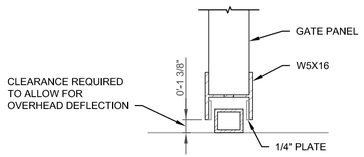


## C1 BOTTOM RAIL GUIDE
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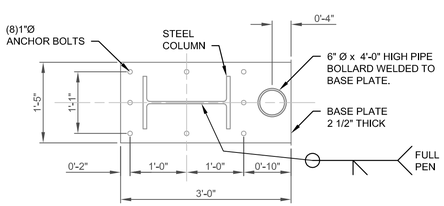
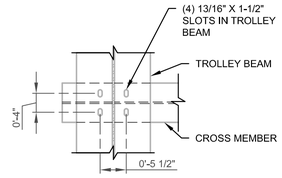



## A1 DETAIL - COLUMN BASE PLATE
SCALE: N.T.S.




## F4 DETAIL
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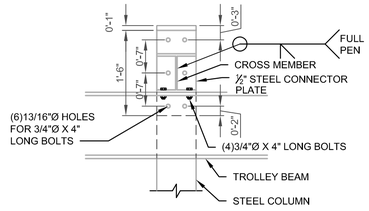


## D4 DETAIL
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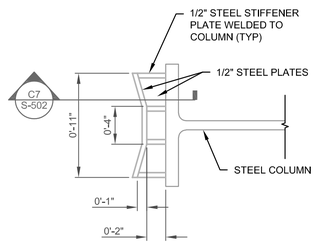
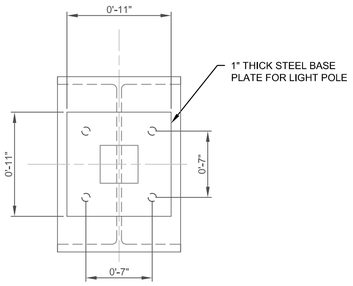
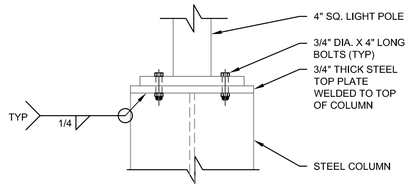
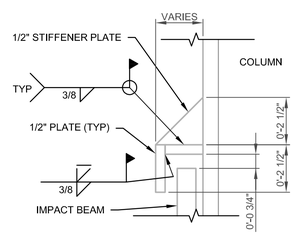



## B4 DETAIL - IMPACT BEAM BRACKETS
SCALE: N.T.S.




## E7 DETAIL - LIGHT POLE CONNECTION
SCALE: N.T.S.




## C7 IMPACT BEAM SECTION
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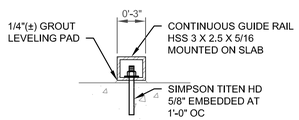


## B7 BOTTOM RAIL DETAIL
SCALE: N.T.S.

## GENERAL NOTES

## SHEET NOTES

1. INSTALL DRAINAGE HOLES AT 1'-0" O.C. ON THE IMPACT BEAM.
2. BOLLARDS SHALL BE INSTALLED ONLY BY COLUMNS NEXT TO THE ROAD.
3. SEAL INSTALLATION HOLES ON THE GUIDE RAIL.

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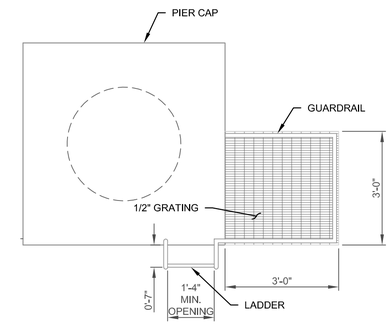
DALLAS, TX, 75252

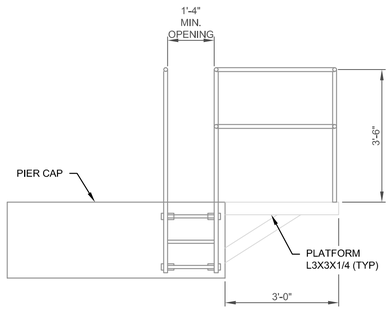
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

STRUCTURAL DETAILS

SHEET ID
ROMA
S-502




E1 OPERATOR PLATFORM - PLAN
SCALE: N.T.S.




C1 OPERATOR PLATFORM - ELEVATION
SCALE: N.T.S.

## GENERAL NOTES

## SHEET NOTES

1. ACCESS LADDER NOT REQUIRED ON THE SITE IF DIFFERENCE BETWEEN TOP OF PIER CAP AND GRADE IS 1'-0" OR LESS.
2. CONTRACTOR TO DESIGN OPERATOR PLATFORM WHERE REQUIRED.

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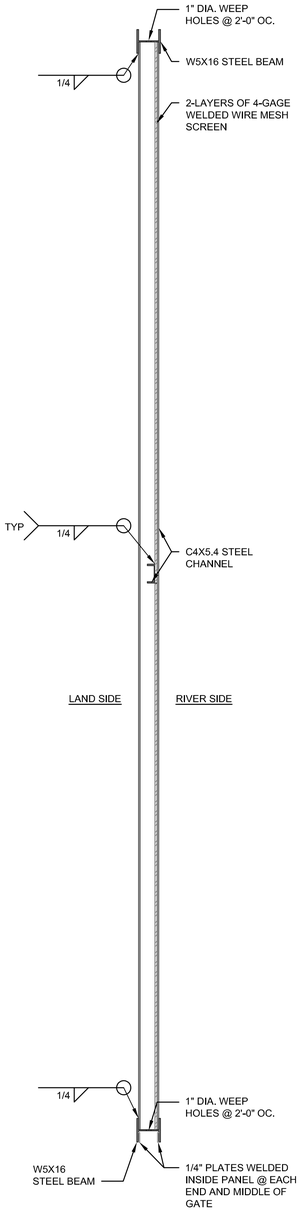
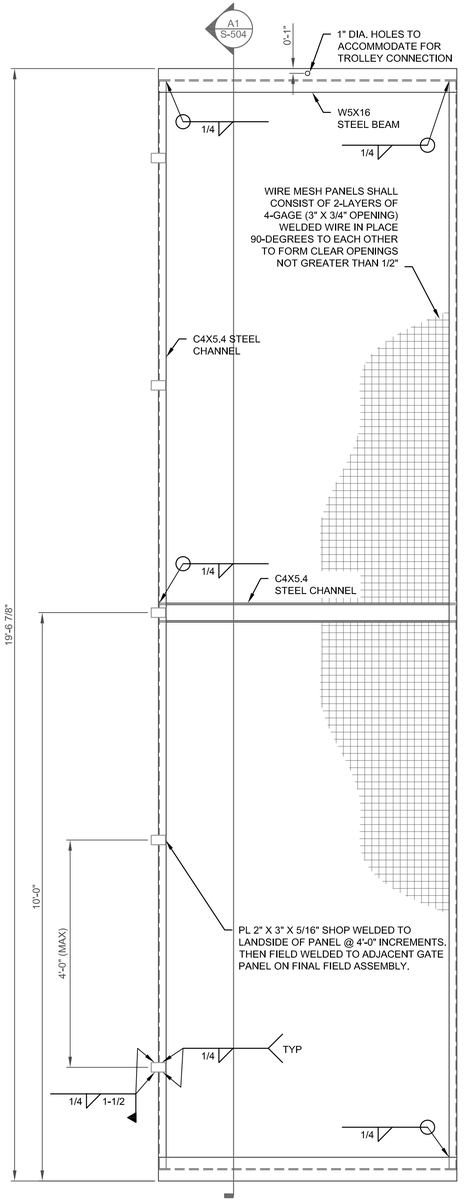
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

# STRUCTURAL DETAILS

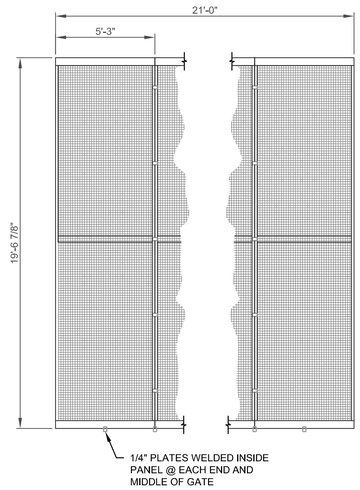
SHEET ID
ROMA
S-503



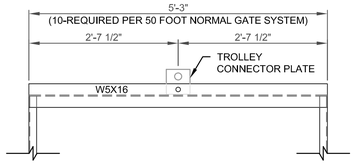

A1 SECTION
SCALE: N.T.S.



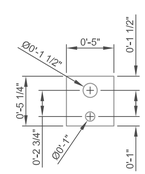

A3 ELEVATION
SCALE: N.T.S.




E5 ELEVATION - WIRE MESH GATES (TYP.)
SCALE: N.T.S.




C5 DETAIL - TROLLEY CONNECTOR PLATE
SCALE: N.T.S.




A5 DETAIL - TROLLEY CONNECTOR PLATES
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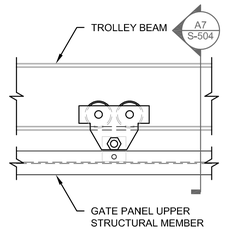
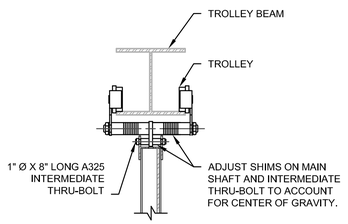



C7 DETAIL - TROLLY CONNECTION
SCALE: N.T.S




A7 SECTION THROUGH TROLLEY
SCALE: N.T.S.

## GENERAL NOTES

## SHEET NOTES

1. JOIN COMPLETED PANELS TOGETHER IN FIELD USING WELD PLATES AND STITCH WELDS AS SHOWN.
2. AFTER GATE PANELS ARE ASSEMBLED, ATTACH OPERATOR GUIDE RAIL, IMPACT BEAM, AND OTHER APPURTENANCES IN THEIR APPROPRIATE POSITIONS FOR OPERATION.
3. REFER TO ELECTRIC AND CONTROL SCHEMATICS, FOR ATTACHMENT OF OTHER CONTROLS.
4. THE MESH SHALL BE POSITIONED SUCH THAT ONLY 3/4" ON CENTER VERTICAL BARS ARE PLACED ON THE RIVER SIDE.
5. STEEL FASTENERS SHALL CONFORM TO ASTM F3125 AND ASTM A325, AND SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
6. THE CONNECTOR PLATE DETAILED ON DETAIL A5 SHALL BE FABRICATED AND USED IN LIEU OF THE TROLLEY MANUFACTURER'S CONNECTOR PLATE.
7. CONNECTOR PLATE SHALL BE BOLTED TO THE UPPER FRAMING MEMBER OF THE PANELS.
8. WELDING SCHEME FOR DOUBLE LAYER 4-GAGE WIRE MESH;
   - VERTICAL COMPONENT OF WIRE MESH SHALL BE POSITIONED FACING RIVER SIDE.
   - WIRE MESH LAYERS SHALL BE SPOT-WELDED TO EACH OTHER ON APPROXIMATE 12" CENTERS, OR AS REQUIRED TO PREVENT WARPING.
   - WIRE MESH LAYERS SHALL BE WELDED TOGETHER AND AT THE GATE PANEL PERIMETER ON APPROXIMATE 12" CENTERS, OR AS REQUIRED TO PREVENT WARPING.
   - WIRE MESH SHALL ALSO BE WELDED TO C4X5.4 CROSS-FRAMING AT 12" CENTERS TOP AND BOTTOM OF CHANNEL.
9. INSTALL ONE TROLLEY PER PANEL.

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| CHECKED BY: X | CONTRACT NO.: | | |
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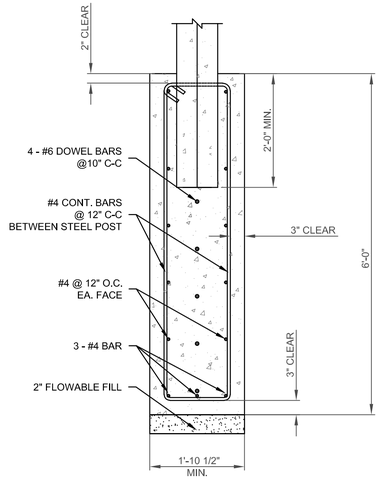
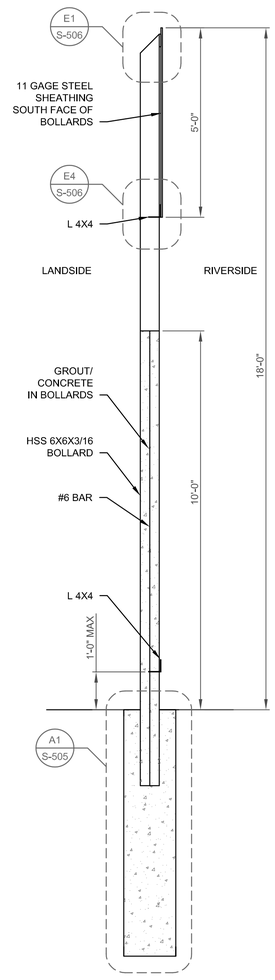
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

# WIRE MESH PANEL DETAILS

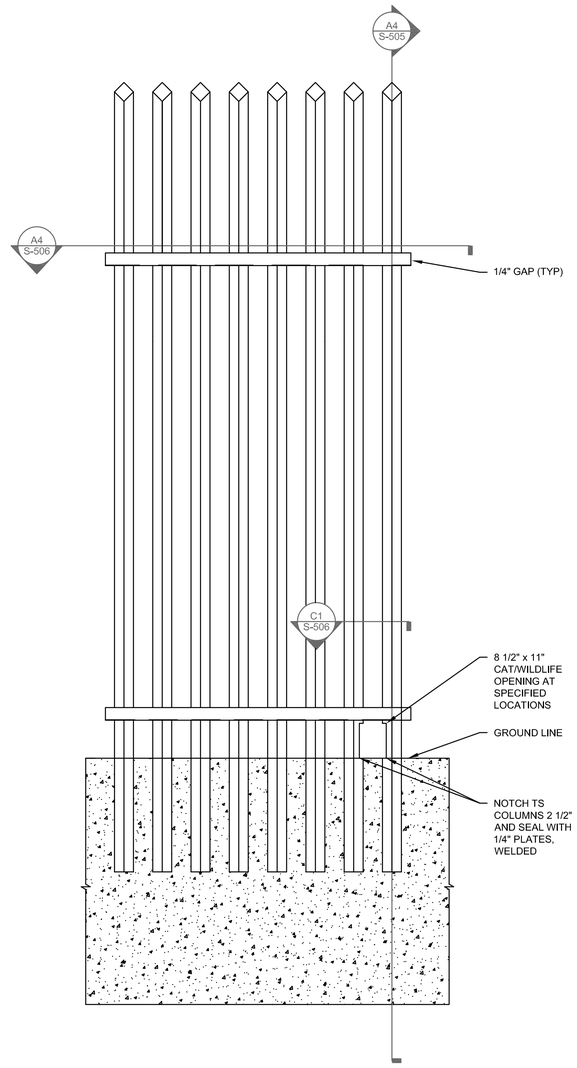
SHEET ID
ROMA
S-504




A1 BOLLARD FENCE FOUNDATION
SCALE: N.T.S.




A4 BOLLARD FENCE SECTION
SCALE: N.T.S.




A7 TYPICAL 8' SECTION BOLLARD FENCE
SCALE: N.T.S.

## GENERAL NOTES

1. 6" MIN. CLR. REQUIRED BETWEEN BOTTOM OF HSS & BOTTOM OF FOUNDATION.
2. CONCRETE TO BE 4000 PSI.
3. STEEL BOLLARDS SHALL BE ASTM A500 GRADE B. REFERENCE TECHNICAL SPECIFICATIONS FOR ALL OTHER MATERIAL REQUIREMENTS NOT PROVIDED IN THE DRAWINGS.
4. PLACE A 2" (MIN) FLOWABLE FILL MUD-MAT AFTER EXCAVATION FOR THE BOLLARD FENCE FOUNDATION. MUD MAT TO ACT AS A LEVELING PAD FOR THE FOUNDATION.
5. AT LOCATIONS DIRECTED BY CBP, NOTCH TWO ADJACENT BOLLARDS 2 $\frac{3}{4}$" TO HEIGHT REQUIRED TO PROVIDE 8 $\frac{1}{2}$" x 11" CAT OPENING.
6. BOLLARD FILLER FENCE WILL BE SUPPORTED ON A 6-FOOT-DEEP FOUNDATION. THE FINAL REPORT WILL PROVIDE FOOTING BEARING AND SUBGRADE PREPARATION CRITERIA FOR SUPPORT ON STIFF, LEAN AND FAT, CLAYEY NATIVE SOILS, WHICH WILL LIKELY INCLUDE 1) AN ALLOWABLE BEARING PRESSURE OF 2,000 PSF; 2) CLEANING OF LOOSENED OR SLOUGHED SOILS PRIOR TO CONCRETE PLACEMENT; 3) REVIEW OF PREPARED BEARING SURFACES PRIOR TO REINFORCING STEEL AND CONCRETE PLACEMENT; AND 4) PLACEMENT OF A MINIMUM 2" THICK CONCRETE MUD MAT IMMEDIATELY FOLLOWING BEARING SURFACE REVIEW AND PRIOR TO REINFORCING STEEL PLACEMENT IN ORDER TO LIMIT ANY CHANGES IN THE IN-SITU SUBGRADE MOISTURE CONTENT.

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SUBMITTED BY: B.PRESTON
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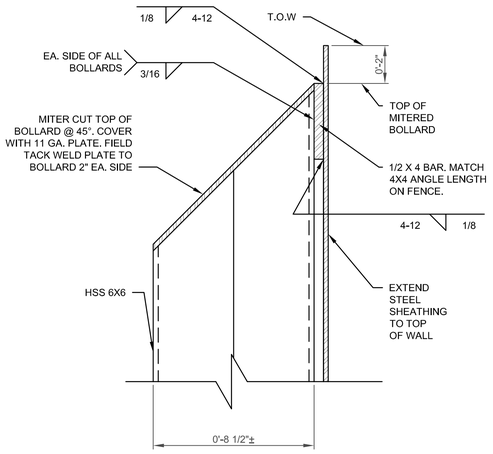
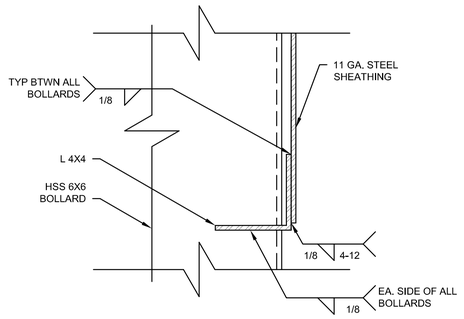
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

FENCE DETAILS

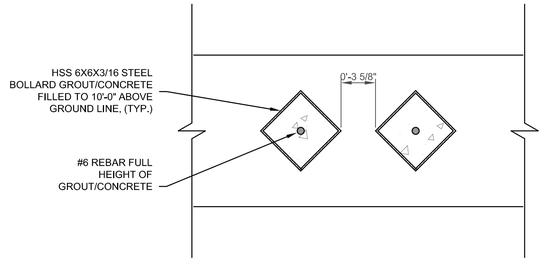
SHEET ID
ROMA
S-505



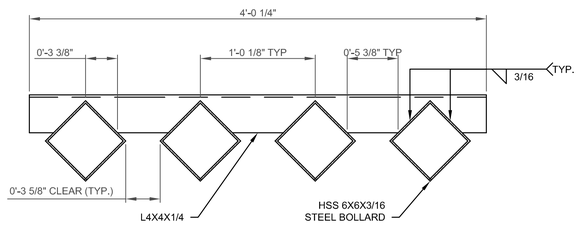

E1 TOP OF FENCE DETAIL
SCALE: N.T.S.



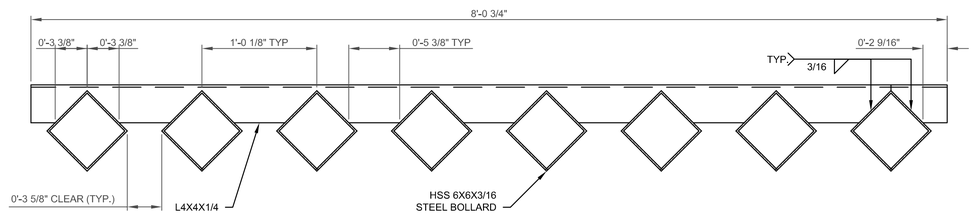

E4 BOTTOM OF SHEATHING DETAIL
SCALE: N.T.S.




C1 BOLLARD FENCE DETAIL
SCALE: N.T.S.




A1 BOLLARD FILLER FENCE
SCALE: N.T.S.




A4 BOLLARD FENCE
SCALE: N.T.S.

## GENERAL NOTES

1. 6" MIN. CLR. REQUIRED BETWEEN BOTTOM OF HSS & BOTTOM OF FOUNDATION.
2. CONCRETE TO BE 4000 PSI.
3. STEEL BOLLARDS SHALL BE ASTM A500 GRADE B. REFERENCE TECHNICAL SPECIFICATIONS FOR ALL OTHER MATERIAL REQUIREMENTS NOT PROVIDED IN THE DRAWINGS.

XX

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|

| | |
|---|---|
| DESIGNED BY: | B.PRESTON |
| DRAWN BY: | B.DUNNE |
| CHECKED BY: | B.PRESTON |
| SUBMITTED BY: | B.PRESTON |
| SIZE: | ANSI D |
| ISSUED DATE: | |
| SOLICITATION NO: | |
| CONTRACT NO.: | |
| FILE NUMBER: | |

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

# FENCE DETAILS

SHEET ID
ROMA
S-506

# ONE-LINE AND RISER

KVA,CLG
HV-LV
Z
POWER TRANSFORMER

AMP
*
LOW VOLTAGE CIRCUIT BREAKER, DRAWOUT:
E.O. = ELECTRICALLY OPERATED
G = GROUND
I = INSTANTANEOUS
IA = INSTANTANEOUS AMPS
LT = LONG TIME
M.O. = MANUALLY OPERATED
ST = SHORT TIME
S = SENSOR RATING

A
MOLDED CASE CIRCUIT BREAKER

AF
MEDIUM VOLTAGE CIRCUIT BREAKER, DRAWOUT

MINIATURE CIRCUIT BREAKER

AMP
FUSE
FUSED CUT-OUT SWITCH

AMP
AMP
FUSED DISCONNECT SWITCH

AMP
NON-FUSED DISCONNECT SWITCH

AF
AT
SIZE
*
COMBINATION CIRCUIT BREAKER WITH STARTER:
FVNR = FULL VOLTAGE NON-REVERSING
FVR = FULL VOLTAGE REVERSING
2S = TWO SPEED
1W = ONE WINDING
2W = TWO WINDING
C = CONTACTOR
SFT = SOFT START

AMP
FUSE
MEDIUM VOLTAGE MOTOR STARTER

PANELBOARD

TRANSFER SWITCH (AUTOMATIC OR MANUAL)

CONVERTER OR VFD
* = ~ = AC, - = DC

HP
MOTOR

KW
KVA
GEN
PF
Z
GENERATOR

*
LOCAL CONTROL:
OP = CONTROL PANEL
HTR = HEATER
SKD = SKID MOUNTED LOAD
VFD = VARIABLE FREQUENCY DRIVE
HOA = HAND/OFF/AUTO

KV
MCOV
SURGE ARRESTOR

AMP
FUSE

BATTERY

OPEN DELTA

IMPEDANCE GROUNDED WYE

GROUND

DELTA

SOLID GROUNDED WYE

*
MULTIFUNCTION RELAY OR METER (* NOTE 5)

(QTY)
PRI:SEC
ACCUR
VOLTAGE TRANSFORMER

(QTY)
PRI/SEC
ACCUR
CURRENT TRANSFORMER
■ INDICATES POLARITY

PRI/SEC
ACCUR
CURRENT TRANSFORMER, ZERO SEQUENCE

WH
WATT HOUR METER

# RACEWAY AND LINE TYPES

CONDUIT STUB WITH CAP

CONDUIT:
EMBEDDED
EXPOSED
UNDERGROUND DIRECT BURIAL

C
CONDUIT TURN-DOWN

O
CONDUIT TURN-UP

J
JUNCTION BOX

BUS
POWER CIRCUIT
CT & VT CIRCUIT
CONTROL CIRCUIT
COMMUNICATION
ELECTRICAL ENCLOSURE
$E_X$
EXISTING OVERHEAD ELECTRICAL LINES
NEW UNDERGROUND COMMUNICATIONS DUCTBANK
NEW UNDERGROUND ELECTRICAL DUCTBANK
INDICATES CABLE NUMBER

HOME RUN CONDUIT - SHORT STROKES INDICATE PHASE OR SWITCHED WIRES, LONG STROKES INDICATE NEUTRAL, LONG STROKES WITH DOT INDICATE GROUND CONDUCTORS, LONG STROKES WITH TICK INDICATE ISOLATED GROUND

# PLAN VIEW

T
TRANSFORMER

NON-FUSED DISCONNECT SWITCH

FUSED DISCONNECT SWITCH

COMBINATION DISCONNECT WITH STARTER

HP
HORSEPOWER RATED DISCONNECT SWITCH

PANELBOARD, 480Y/277V OR 480V

PANELBOARD, 208Y/120V OR 120/240V

SERVICE ENTRANCE METER

XFR
TRANSFER SWITCH (AUTOMATIC OR MANUAL)

M
MOTOR

GEN
GENERATOR

LOCAL CONTROL PANEL

SPECIAL PURPOSE RCPT OR CONNECTION, 480V

SPECIAL PURPOSE RCPT OR CONNECTION, 240V

MH
MANHOLE

HH
HANDHOLE

*
SINGLE RECEPTACLE

*
DUPLEX RECEPTACLE

*
FOURPLEX RECEPTACLE

J
SURFACE RACEWAY (WIREMOLD)

COIL

# LIGHTING

(SEE NOTE 3)

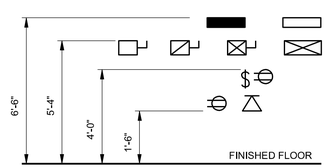
X
LED BOLLARD LIGHT

X
HID/INCANDESCENT, WALL MOUNTED

X
HID/INCANDESCENT, POLE MOUNTED

EMERGENCY BATTERY OPERATED UNIT

# ELECTRICAL DEVICE MOUNTING HEIGHT




# LIGHTING CONTINUED

EXIT SIGN, SINGLE FACE, CEILING MOUNT

EXIT SIGN, DOUBLE FACE, CEILING MOUNT

EXIT SIGN, ARROW INDICATES DIRECTION

WALL MOUNT

*
LIGHTING CONTROL:
LC = LIGHTING CONTACTOR
OC = OCCUPANCY SENSOR
PE = PHOTOELECTRIC CELL
TC = TIME CLOCK
C = CONTACTOR
PSR = PHOTO SENSOR - RECEIVER
PST = PHOTO SENSOR - TRANSMITTER

$
SWITCH, SINGLE POLE

$ *
SWITCH:
3 = THREE-WAY
4 = FOUR-WAY
D = DIMMER
K = KEY OPERATED
P = PILOT
a,b,c = DENOTES SWITCHING CONTROL

PS
SAFETY PHOTO SENSOR

ML
MAGLOCK

KP
SECURITY KEYPAD

# COMMUNICATION

TEL
TELEPHONE PANEL

TTB
TELEPHONE TERMINAL BOARD

AMP
AMPLIFIER

CCTV SURVEILLANCE CAMERA, FIXED

CCTV SURVEILLANCE CAMERA, PAN/ZOOM/TILT

WALL MOUNT

# GROUNDING

GROUND CONDUCTOR

LIGHTNING PROTECTION CONDUCTOR

GROUND

GROUND ROD

LIGHTNING PROTECTION AIR TERMINAL

LIGHTNING PROTECTION SPHERE

THROUGH ROOF TERMINAL

GROUNDING CONNECTION TO STRUCTURE

FLUSH GROUND PLATE

GROUND CONDUCTOR CONNECTION

GROUNDING PIGTAIL

# GENERAL NOTES

1. ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THIS LEGEND MAY NOT APPEAR ON THIS SET OF DRAWINGS.
2. FOR GENERAL LEGEND AND ABBREVIATIONS, SEE "GG" DRAWINGS.
3. X ON FIXTURE SYMBOL DENOTES FIXTURE TYPE DESIGNATION. SEE FIXTURE SCHEDULE.
4. USE DIRECTIONAL ARROW ON EXIT SIGNS AS REQUIRED.
5. IEEE STANDARD C37.2-1991, ELECTRICAL POWER SYSTEM DEVICE FUNCTION NUMBERS.

# ELECTRICAL ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS INDICTED MAY APPEAR ON THESE DRAWINGS

| | | | |
|---|---|---|---|
| ABOVE FINISH FLOOR | AFF | KILOVAR (REACTANCE) | KVAR |
| ABOVE FINISHED GRADE | AFG | KILOVOLT AMPERE | KVA |
| ACCENT | ACC | KILOWATT | KW |
| ADJUSTABLE | ADJ | KILOWATT HOUR METER | KWH |
| ALTERNATING CURRENT | AC | | |
| ALUMINUM | AL | LIGHT | LT |
| AMERICAN WIRE GAUGE | AWG | LIGHTING | LTG |
| AMMETER | AM | LIGHTING ARRESTOR | LA |
| AMPERE | A/AMP | LOW VOLTAGE | LV |
| APPROXIMATE(LY) | APPROX | | |
| ASYMMETRIC | ASY | MAIN CIRCUIT BREAKER | MCB |
| AUTOMATIC TRANSFER SWITCH | ATS | MAIN DISTRIBUTION PANEL | MDP |
| | | MAIN LUGS ONLY | MLO |
| BATTERY | BATT | MANHOLE | MH |
| BLACK | BLK | MANUAL TRANSFER SWITCH | MTS |
| BRACKET | BRKT | MANUFACTURER | MFR |
| BREAKER | BKR | MASTER ANTENNA TELEVISION | MATV |
| | | MECHANICAL CONTRACTOR | MC |
| CABINET | CAB | MEDIUM VOLTAGE | MV |
| CABLE TELEVISION | CATV | METAL HALIDE | MH |
| CEILING | CLG | METAL-CLAD CABLE | MC |
| CIRCUIT | CKT | MISCELLANEOUS | MISC |
| CIRCUIT BREAKER | CKT BKR | MOTOR CIRCUIT PROTECTOR | MCP |
| CLEAR | CLR | MOTOR CONTROL CENTER | MCC |
| CLOSED CIRCUIT TELEVISION | CCTV | MOTOR OPERATED DAMPER | MOD |
| COLUMN | COL | MOUNTED | MTD |
| COMMUNICATION | COMM | MOUNTING HEIGHT | MTG HT |
| CONDUIT | C | | |
| COOL WHITE | CW | NATIONAL ELECTRICAL | NEMA |
| COPPER | CU | MANUFACTURER'S ASSOCIATION | |
| CURRENT LIMITING FUSE | CLF | NATIONAL ELECTRICAL CODE | NEC |
| CURRENT TRANSFORMER | CT | NIGHT LIGHT | NL |
| | | NORMALLY CLOSED | NC |
| DECIBEL | DB | NORMALLY OPEN | NO |
| DEDICATED | DED | NOT AVAILABLE/NOT APPLICABLE | N/A |
| DIAMETER | DIA | NOT FUSED | NF |
| DIRECT CURRENT | DC | NOT IN CONTRACT | NIC |
| DISCONNECT | DISC | NOT TO SCALE | NTS |
| DISTRIBUTION PANEL | DP | | |
| DOUBLE POLE DOUBLE-THROW | DPDT | ON CENTER | OC |
| DOWNLIGHT | DNLT | OVERHEAD | OH |
| DRAWING | DWG | OVERLOAD HEATER ELEMENT | OL |
| DUAL ELEMENT | DE | | |
| | | PANEL | PNL |
| EACH | EA | PEWTER | PEW |
| ELECTRIC WATER COOLER | EWC | PLYWOOD | PLY |
| ELECTRICAL | ELEC | POLE | P |
| ELECTRICAL CONTRACTOR | EC | POLYVINYL CHLORIDE | PVC |
| ELECTRICALLY OPERATED | ED | POTENTIAL TRANSFORMER | PT |
| ELEVATION | EL | POWER PANEL | PP |
| ELEVATOR | ELEV | PULL BOX | PB |
| EMERGENCY LIGHTING | EM | | |
| ENERGY SAVING BALLAST | ESB | RAPID START | RS |
| EQUIPMENT | EQUIP | RECEPTACLE | REC/RECPT |
| EXHAUST FAN | EF | REFLECTOR | REFL |
| EXPLOSION PROOF | XP | REQUIRED | REQ'D |
| | | RIGID GALVANIZED STEEL | RGS |
| FIRE ALARM | FA | CONDUIT | RM |
| FIRE ALARM ANNUNCIATOR | FAAP | ROOM | |
| PANEL | FACP | SCHEDULE | SCHED |
| FIRE ALARM CONTROL PANEL | FAGP | SINGLE POLE DOUBLE THROW | SPDT |
| FIRE ALARM GRAPHIC PANEL | ANNUN | SINGLE POLE SINGLE THROW | SPST |
| FIRE ANNUNCIATOR PANEL | FIXT | SOLID STATE BALLAST | SSB |
| FIXTURE | FL | SURGE PROTECTION DEVICE | SPD |
| FLOOR | FLUOR | SWITCH | SW |
| FLUORESCENT | FC | SWITCHBOARD | SWBD |
| FOOTCANDLES | FLA | SWITCHGEAR | SWGR |
| FULL LOAD AMPERES | FVNR | | |
| FULL VOLTAGE NON-REVERSING | | TELEPHONE | TEL |
| GENERAL CONTRACTOR | GC | TRANSFORMER | XFMR |
| GENERATOR | GEN | TRANSIENT VOLTAGE SURGE SUPPRESSOR | TVSS |
| GROUND | GND/G | TWIN TUBE | TT |
| GROUND FAULT CIRCUIT INTERRUPTER | GFCI | TYPICAL | TYP |
| HAND DRYER | HD | | |
| HAND HOLE | HH | UNDERGROUND | UG |
| HEATING VENTILATING AND AIR CONDITIONING | HVAC | UNDERWRITERS' LABORATORIES | UL |
| HERTZ | HZ | UNINTERRUPTIBLE POWER SUPPLY | UPS |
| HIGH INTENSITY DISCHARGE | HID | UNLESS OTHERWISE NOTED | UON |
| HIGH POWER FACTOR | HPF | VAPOR PROOF | VP |
| HIGH VOLTAGE | HV | VOLT | V |
| HORSEPOWER | HP | VOLTMETER | VM |
| | | WARM WHITE | WW |
| INCANDESCENT | INCAN | WATT | W |
| ISOLATED GROUND | IG | WEATHERPROOF | WP |
| | | WITH | W/ |
| JUNCTION BOX | JB OR JCT BOX | WITHIN | W/I |
| | | WITHOUT | W/O |

US Army Corps of Engineers ®

DATE
DESCRIPTION
MARK

ISSUED DATE:
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
DESIGNED BY: M.J. HILL
DRAWN BY: D.A. NELSON
CHECKED BY:
SUBMITTED BY:
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
LEGEND AND ABBREVIATIONS

SHEET ID
ROMA
E-001

# LIGHTING GENERAL NOTES

1. THESE PLANS ARE INTENDED TO DEPICT THE LIGHT FIXTURE POLE LAYOUT, CIRCUITING REQUIREMENTS, PHOTOMETRIC REQUIREMENTS, AND OTHER GENERAL REQUIREMENTS FOR THE LIGHT FIXTURES TO BE USED.
2. THE INTENT OF THE LIGHTING DESIGN IS A PERFORMANCE SPECIFICATION, DESIGNED TO GIVE SPECIFIC REQUIREMENTS FOR THE PERFORMANCE OF THE LIGHT FIXTURES. REFERENCE SPECIFICATIONS FOR ALL REQUIREMENTS. ANY MANUFACTURER MEETING ALL REQUIREMENTS WILL BE CONSIDERED ACCEPTABLE.
3. THE LIGHT FIXTURES FOR GENERAL ENFORCEMENT ZONE ILLUMINATION MUST MEET THE FOLLOWING PHOTOMETRIC REQUIREMENTS WITHIN THE ENFORCEMENT ZONE, AT THE LIGHT POLE HEIGHTS AND SPACING INDICATED ON THE PLANS (IN ADDITION TO OTHER REQUIREMENTS ON THE PLANS AND SPECIFICATIONS):
   - AVERAGE OF 3 HORIZONTAL FOOTCANDLES AT GRADE ACROSS THE ENTIRE ENFORCEMENT ZONE BOUNDARY INDICATED ON THE PLANS, WHICH RANGES FROM 50-150 FEET FROM THE BORDER FENCE AS SHOWN ON THE PLANS.
   - -MAXIMUM TO MINIMUM FOOTCANDLE RATIO OF 20 TO 1 WITHIN THE ENFORCEMENT ZONE.
   - -LIGHT TRESPASS BEYOND THE ENFORCEMENT ZONE SHALL BE LIMITED TO 0.5 FOOTCANDLES, AND SHALL TAPER TO BELOW 0.1 FOOTCANDLES AT A MAXIMUM OF 75 FEET BEYOND THE ENFORCEMENT ZONE BOUNDARY.
4. THE LIGHT FIXTURES AT THE VEHICULAR GATES MUST MEET THE FOLLOWING PHOTOMETRIC REQUIREMENTS WITHIN THE GATE AREAS, AT THE MOUNTING HEIGHT AND LOCATIONS INDICATED ON THE PLANS (IN ADDITION TO OTHER REQUIREMENTS ON THE PLANS AND SPECIFICATIONS):
   - ILLUMINATE A PERIMETER OF 100 FEET BY 100 FEET, CENTERED ON THE MIDDLE OF THE GATE TO A MINIMUM OF 2 FOOT CANDLES AT THE GROUND LEVEL.

# MEDIA CONVERTER GENERAL NOTES

1. MEDIA CONVERTER SHALL BE CAPABLE OF (2) INDEPENDENT FIBER OPTIC INPUTS AND (1) PoE COPPER CABLING OUTPUT. MEDIA CONVERTER SHALL AUTOMATICALLY TRANSFER BETWEEN FIBER OPTIC INPUTS AS AVAILABLE.
2. MEDIA CONVERTERS SHALL BE POWERED UTILIZING STANDARD 110V ELECTRICAL OUTLET.

# GROUNDING GENERAL NOTES

1. FENCE GROUNDING, WHERE INDICATED ON THE PLANS, SHALL CONSIST OF 3/4" X 10' GROUND ROD PER SPECIFICATIONS, WITH THE TOP OF GROUND ROD A DRIVEN A MINIMUM OF 6" BELOW THE TOP OF FINISHED GRADE. CONNECT AND BOND #6 CONDUCTOR FROM GROUND ROD TO FENCE BOLLARD AT LOCATIONS INDICATED ON PLANS. ENSURE THAT BOLLARD FENCING IS ELECTRICALLY CONTINUOUS THROUGH EITHER WELDED PLATE OR CONCRETE ENCASED REINFORCING STEEL.
2. ALL GROUNDING SHALL BE IN STRICT COMPLIANCE WITH ARTICLE 250 OF THE 2017 NATIONAL ELECTRICAL CODE.

# TRANSFER SWITCH GENERAL NOTES

1. MANUAL TRANSFER SWITCHES LOCATED AT THE VEHICLE GATES AND UTILITY CONNECTION POWER DISTRIBUTION POINTS SHALL INCLUDE CAM-LOCK STYLE CONNECTORS FOR QUICK CONNECTION OF PORTABLE GENERATORS.

# CAMERA INFRASTRUCTURE NOTES

1. THE INTENT OF THIS PROJECT IS TO INCLUDE THE NECESSARY INFRASTRUCTURE FOR FUTURE SECURITY CAMERA CONNECTIONS AT LIGHT POLES ALONG THE ENFORCEMENT ZONE BOUNDARY. CAMERAS, CAMERA MOUNTS, AND COPPER CABLING TO THE POLE MOUNTED CAMERAS FROM THE CAMERA BOXES AT THE BASE OF THE LIGHT POLES WILL BE PROVIDED AND INSTALLED BY OTHERS AS PART OF A FUTURE PROJECT. THIS PROJECT INCLUDES ONLY THE CONDUIT INFRASTRUCTURE TO THE LIGHT POLES, THE CAMERA BOXES AS DETAILED AT EVERY 6TH LIGHT POLE, AND THE MEDIA CONVERTERS WITHIN THE CAMERA BOXES.

# MINI-POWER CENTER GENERAL NOTES

1. EACH MINI-POWER CENTER AS INDICATED ON THESE PLANS SHALL BE ENCLOSED IN A WEATHERPROOF NEMA 4X ENCLOSURE, AND SHALL STEP THE VOLTAGE DOWN FROM 480V TO 120/240V, SINGLE PHASE. EACH MINI-POWER CENTER SHALL HAVE A MINIMUM INTEGRATED 3KVA TRANSFORMER WITHIN THE ENCLOSURE, AS WELL AS TRANSFORMER PRIMARY CIRCUIT BREAKER AND (8) 20A/1P SECONDARY CIRCUIT BREAKERS, FOR 120V FEEDERS TO CAMERA MEDIA CONVERTER ENCLOSURES.

# GATE GENERAL NOTES

1. PROVIDE COMMUNICATIONS AND ELECTRICAL HANDHOLE AT EACH GATE.
2. PROVIDE COMMUNICATIONS, POWER, AND CONTROLS AT EACH GATE PER DRAWINGS E-503 AND E-603

# ELECTRICAL GENERAL NOTES

1. THESE PLANS ARE SCHEMATIC. THE CONTRACT DOCUMENTS CREATED BY THIS OFFICE ARE DIAGRAMMATIC AND SHOW THE INTENTION OF THIS PROJECT TO INSTALL NEW EQUIPMENT AND ASSOCIATED MATERIALS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
2. ALL ELECTRICAL WORK IS REQUIRED TO BE PERFORMED BY A CERTIFIED ELECTRICAL CONTRACTOR. ALL WIRING, EQUIPMENT, DEVICES AND INSTALLATIONS SHALL CONFORM TO ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES.
3. PROVIDE ALL WIRING, CONDUIT, LABOR AND MATERIALS NOT SHOWN ON PLAN, BUT NECESSARY FOR COMPLETE AND PROPER OPERATION OF THE ELECTRICAL SYSTEM.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES AND PERMITS AS NECESSARY TO COMPLETE THIS JOB. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO ENSURE A COMPLETE WORKING SYSTEM.
5. ALL ELECTRICAL WORK MUST COMPLY WITH THE REQUIREMENTS OF NFPA 70 (NATIONAL ELECTRICAL CODE), NFPA 70B, NFPA 70E, IECC, OSHA IN ADDITION TO OTHER REFERENCES REQUIRED BY CONTRACT.
6. INSTALLATION OF SWITCHES, OUTLETS AND CONTROL DEVICES SHALL COMPLY WITH LOCAL CODES AND STATE ADA REQUIREMENTS.
7. REFER TO CIVIL PLANS FOR EXACT LOCATIONS OF ALL EQUIPMENT.
8. ALL ELECTRICAL EQUIPMENT, DEVICES AND CIRCUITS SHALL CONTAIN A GROUNDING CONDUCTOR. CONDUIT SYSTEM SHALL NOT BE USED AS GROUNDING NETWORK. ALL GROUNDING SHALL BE IN STRICT COMPLIANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
9. COORDINATE LOCATION AND VERIFY REQUIREMENTS OF ALL EXTERIOR UTILITY EQUIPMENT AND METER BASE WITH OWNER AND UTILITY COMPANY. UTILITY PROVIDER FOR THE PROJECT IS A.E.P. CONTRACTOR RESPONSIBLE FOR PROVIDING UTILITY SERVICE PROVIDER WITH LOAD FORMS AND ALL INFORMATION REQUIRED FOR NEW SERVICE INSTALLATION PER UTILITY COMPANY STANDARDS. COORDINATE WITH UTILITY COMPANY FOR EXACT SERVICE POINT, POLE, AND TRANSFORMER LOCATIONS.
10. UTILITY SECONDARY TRENCH AND CONDUIT REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE UTILITY COMPANY SPECIFICATIONS. COORDINATE WITH UTILITY COMPANY. PROVIDE AND INSTALL ALL MATERIAL AND EQUIPMENT AS REQUIRED FOR COMPLETE JOB INSTALLATION.
11. ALL SWITCHBOARDS, PANELBOARDS, TRANSFORMERS, DISCONNECT SWITCHES AND OTHER ELECTRICAL DEVICES AND EQUIPMENT SHALL HAVE ENGRAVED NAMEPLATES INDICATING EQUIPMENT IDENTIFICATION TAG AND VOLTAGE, AS WELL AS WHERE DEVICE IS FED FROM. ALL SWITCHBOARDS AND PANELBOARDS SHALL HAVE TYPED DIRECTORIES INDICATING DISTRIBUTION AND BRANCH CIRCUIT FEEDERS.
12. CONTRACTOR IS RESPONSIBLE FOR NATIONAL ELECTRICAL CODE REQUIRED CLEARANCES AROUND AND ABOVE ALL ELECTRICAL EQUIPMENT AND DEVICES.
13. SHORT CIRCUIT AMPERE INTERRUPTING CAPACITY (A.I.C.) RATING OF ALL ELECTRICAL PRODUCTS SHALL BE GREATER THAN THE MAXIMUM AVAILABLE SHORT CIRCUIT CURRENT.
14. WIRE AND CONDUIT SIZES SHALL BE INSTALLED AND SIZED TO COMPENSATE FOR VOLTAGE DROP PER THE NATIONAL ELECTRICAL CODE.
15. ALL ELECTRICAL AND ELECTRONIC COMPONENTS EXPOSED TO WEATHER SHALL BE RATED AT NEMA 4X; INCLUDING, BUT NOT LIMITED TO: DISTRIBUTION PANELS, JUNCTION BOXES, RECEPTACLES, OUTLETS, PERIPHERALS, SENSORS, TRANSMITTERS, KEYPADS, AND THE FASTENERS USED/CONNECTIONS MADE THEREFORE.
16. ALL LIGHT POLE AND RVSS TOWER HAND HOLES AND ACCESS PANELS BELOW 20'-0" ABOVE GROUND SHALL EMPLOY PROPRIETARY GEOMETRY, HIGH LEVEL SECURITY, TAMPER-PROOF FASTENERS THAT WILL NOT PROMOTE DISSIMILAR METALS CORROSION.

# RVSS TOWER GROUNDING GENERAL NOTES

1. AS PART OF THE WORK, THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING AND INSTALLING A EARTH ELECTRODE SYSTEM (EES) AT THE BASE OF EACH OF THE RVSS TOWER LOCATIONS INDICATED ON THE PLANS. EES SHALL BE UTILIZED FOR FUTURE CONNECTION OF TOWER GROUNDING, TOWER LIGHTNING PROTECTION, ELECTRICAL/FIBER EQUIPMENT AND ENCLOSURE GROUNDING, FENCING / BOLLARDS, AND RVSS UPS EQUIPMENT GROUNDING. FINAL CONNECTIONS TO FUTURE OR OWNER PROVIDED EQUIPMENT NOT INDICATED TO BE INSTALLED ON THESE PLANS SHALL BE BY OTHERS.
2. ALL GROUNDING AT RVSS TOWERS SHALL CONFORM TO FAA-STD-019E AS A MINIMUM.
3. GROUNDING ELECTRODE SYSTEM SHALL BE USED FOR LIGHTNING PROTECTION OF THE FUTURE RVSS TOWER, AND AS SUCH, SYSTEM SHALL BE INSTALLED AND LABELED IN ACCORDANCE WITH ALL UL 96A AND NFPA 780 REQUIREMENTS.
4. SITE SURVEY: A SITE SURVEY SHALL BE CONDUCTED BY THE CONTRACTOR FOR BOTH RVSS SITES INDICATED ON THESE PLANS TO DETERMINE THE GEOLOGICAL AND OTHER PHYSICAL CHARACTERISTICS OF THE SURROUNDING EARTH. INFORMATION TO BE COLLECTED SHALL INCLUDE LOCATION OF ROCK FORMATIONS, GRAVEL DEPOSITS, SOIL TYPES ETC. PERFORM A SOIL RESISTIVITY TEST AT PROBE SPACINGS OF 10, 20, 30 AND 40 FEET IN FOUR DIRECTIONS FROM THE PROPOSED RVSS TOWER AND EQUIPMENT. ALL SURVEY DATA, INCLUDING SOIL RESISTIVITY MEASUREMENTS, SHALL BE NOTED ON A SCALED DRAWING OR SKETCH OF THE SITE AND SUBMITTED TO THE ENGINEER FOR REVIEW.
5. SHOP DRAWINGS: CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF THE PROPOSED EES TO THE ENGINEER FOR REVIEW AND APPROVAL, INDICATING LOCATIONS OF ALL GROUNDING ELECTRODES, GROUNDING CONDUCTORS, AND OTHER GROUNDING ACCESSORIES AS REQUIRED. THE EES SHALL CONSIST OF AT LEAST (4) DRIVEN GROUND RODS (CONFIGURATION AND DEPTH BASED ON SOIL TEST), SUPPLEMENTAL GROUNDING ELECTRODES (IF REQUIRED), AND BURIED INTERCONNECTING CONDUCTORS. THE SITE SURVEY INFORMATION SHALL BE USED AS THE BASIS FOR THE DESIGN OF THE EES. THE RESISTANCE TO EARTH OF THE EES SHALL BE NOT OVER 10 OHMS. WHERE CONDITIONS ARE ENCOUNTERED SUCH AS ROCK NEAR THE SURFACE, SHALLOW SOILS, PERMAFROST AND SOILS WITH LOW MOISTURE OR MINERAL CONTENT, A SUPPLEMENTAL GROUNDING ELECTRODE MAY BE REQUIRED TO BE USED.
6. SUPPLEMENTAL GROUNDING ELECTRODES: GROUND DISSIPATION PLATES MAY BE USED. IN SHALLOW SOIL LOCATIONS WITH LIMITED SURFACE SPACE, GROUND DISSIPATION PLATES SHALL BE ALLOWED IN PLACE OF GROUND RODS IN THE EARTH ELECTRODE SYSTEM (EES). THE PLATES SHALL BE INSTALLED AT THE CORNERS OF THE EES AT THE FARTHEST ACCESSIBLE POINT FROM THE RVSS TOWER. PLATES SHALL BE CONSTRUCTED OF A MINIMUM ONE QUARTER-INCH THICK COPPER AND BE A MINIMUM OF TWO FEET SQUARE. THESE PLATES SHOULD BE INSTALLED IN A VERTICAL PLANE TO TAKE ADVANTAGE OF SEASONAL MOISTURE AND TEMPERATURE CHANGES IN THE SOIL. INSTALL THE PLATES AT THE SAME DEPTH OR DEEPER THAN THE INTERCONNECTING CONDUCTOR, BUT MAINTAIN A MINIMUM OF ONE-FOOT OF NATIVE SOIL ABOVE THE UPPER EDGE OF THE PLATE. ATTACHMENT TO THE EES SHALL BE WITH A 4/0 AWG BARE STRANDED COPPER CONDUCTOR, EXOTHERMICALLY WELDED TO THE EES AND THE PLATE. THE ATTACHMENT POINT AT THE PLATE SHALL BE AT THE CENTER OF THE PLATE, NOT NEAR THE EDGE OR THE CORNERS. THEY SHALL BE CONFIGURED AS A JORDAN DISSIPATION PLATE DESIGN OR EQUAL.
7. INTERCONNECTIONS: GROUND RODS AND GROUNDING ELECTRODES OF THE EES SHALL BE INTERCONNECTED BY A BURIED, BARE, 4/0 AWG COPPER CONDUCTOR. THE CONDUCTOR SHALL BE BURIED AT 30" BELOW GRADE LEVEL. CONNECTIONS TO THE GROUNDING ELECTRODES SHALL BE EXOTHERMICALLY WELDED. THE INTERCONNECTING CONDUCTOR SHALL CLOSE ON ITSELF FORMING A COMPLETE LOOP WITH THE ENDS EXOTHERMICALLY WELDED. THE BONDING RESISTANCE OF ALL INTERCONNECTIONS SHALL BE ONE MILLIOHM OR LESS FOR EACH BOND WHEN MEASURED WITH A 4-TERMINAL MILLIOHM METER.
8. A MINIMUM OF ONE ACCESS WELL SHALL BE INSTALLED FOR THE EES. THE WELL SHOULD BE LOCATED AT A GROUND ROD THAT IS IN AN AREA WITH ACCESS TO THE OPEN SOIL SO THAT CHECKS OF THE EES CAN BE MADE ONCE THE FACILITY IS IN USE. THE ACCESS WELL SHALL BE MADE FROM CLAY PIPE, POURED CONCRETE, OR OTHER APPROVED WALL MATERIAL AND SHALL HAVE A REMOVABLE COVER. THE ACCESS WELL SHALL BE CONSTRUCTED TO PROVIDE A MINIMUM CLEARANCE (12 INCHES RADIUS) FROM THE CENTER OF THE GROUND ROD TO THE INSIDE WALL OF THE ACCESS WELL. THE ACCESS WELL SHALL HAVE AN OPENING OF A MINIMUM 12 INCH RADIUS. CONNECTIONS SHALL BE BY EXOTHERMIC WELDS.
9. CONTRACTOR SHALL STAKE OUT THE EXACT LOCATION OF THE BURIED GROUND LOOP CONDUCTOR IN THE FIELD AFTER INSTALLATION, SO THAT IT CAN BE TIED INTO WITH EQUIPMENT AND TOWER GROUND CONDUCTORS BY OTHERS WITH MINIMUM EXCAVATION.
10. GROUND RODS SHALL BE COPPER CLAD STEEL, MINIMUM 10 FEET IN LENGTH AND 3/4" IN DIAMETER. ROD CLADDING SHALL NOT BE LESS THAN 1/100" THICK. GROUND RODS SHALL BE AS WIDELY SPACED AS POSSIBLE, AND IN NO CASE SPACED LESS THAN ONE ROD LENGTH. TOPS OF GROUND RODS SHALL BE NOT LESS THAN 6 INCHES BELOW GRADE LEVEL.
11. GROUND LOOP CONDUCTOR TRENCH SHALL BE EXCAVATED TO 36" BELOW GRADE. CONDUCTOR SHALL BE INSTALLED AT 30" BELOW GRADE. BOTTOM 12" OF TRENCH SHALL BE BACKFILLED WITH BENTONITE/EARTH MIX BACKFILL. REMAINDER OF TRENCH SHALL BE BACKFILLED WITH COMPACTED BACKFILL.
12. CONTRACTOR SHALL PROVIDE AND INSTALL A 24" X 2" X 1/4" COPPER GROUND BAR ON THE INTERIOR WALL OF THE RVSS TOWER EQUIPMENT SHELTER, WITH ISOLATORS AND PRE-DRILLED GROUNDING HOLES. CONNECT GROUND BAR WITH 4/0 AWG GROUND CONDUCTOR TO GROUND LOOP. GROUND BAR SHALL BE USED FOR PANEL/TRANSFORMER/EQUIPMENT GROUNDING CONNECTIONS PER CODE REQUIREMENTS WITHIN EQUIPMENT SHELTER.
13. THE GROUNDING SYSTEM SHALL BE CONSTRUCTED IN ACCORDANCE WITH UL 96 AND NFPA 780 REQUIREMENTS. CERTIFICATION SHALL BE PERFORMED BY AN INDEPENDENT, THIRD-PARTY INSPECTION FIRM. THE INSPECTION FIRM CANNOT BE THE SYSTEM DESIGNER OR INSTALLER.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|

ISSUED DATE:
SOLICITATION NO:
CONTRACT NO.:
FILE NUMBER:

DESIGNED BY: M.J. HILL
DRAWN BY: D.A. NELSON
CHECKED BY:
SUBMITTED BY:
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

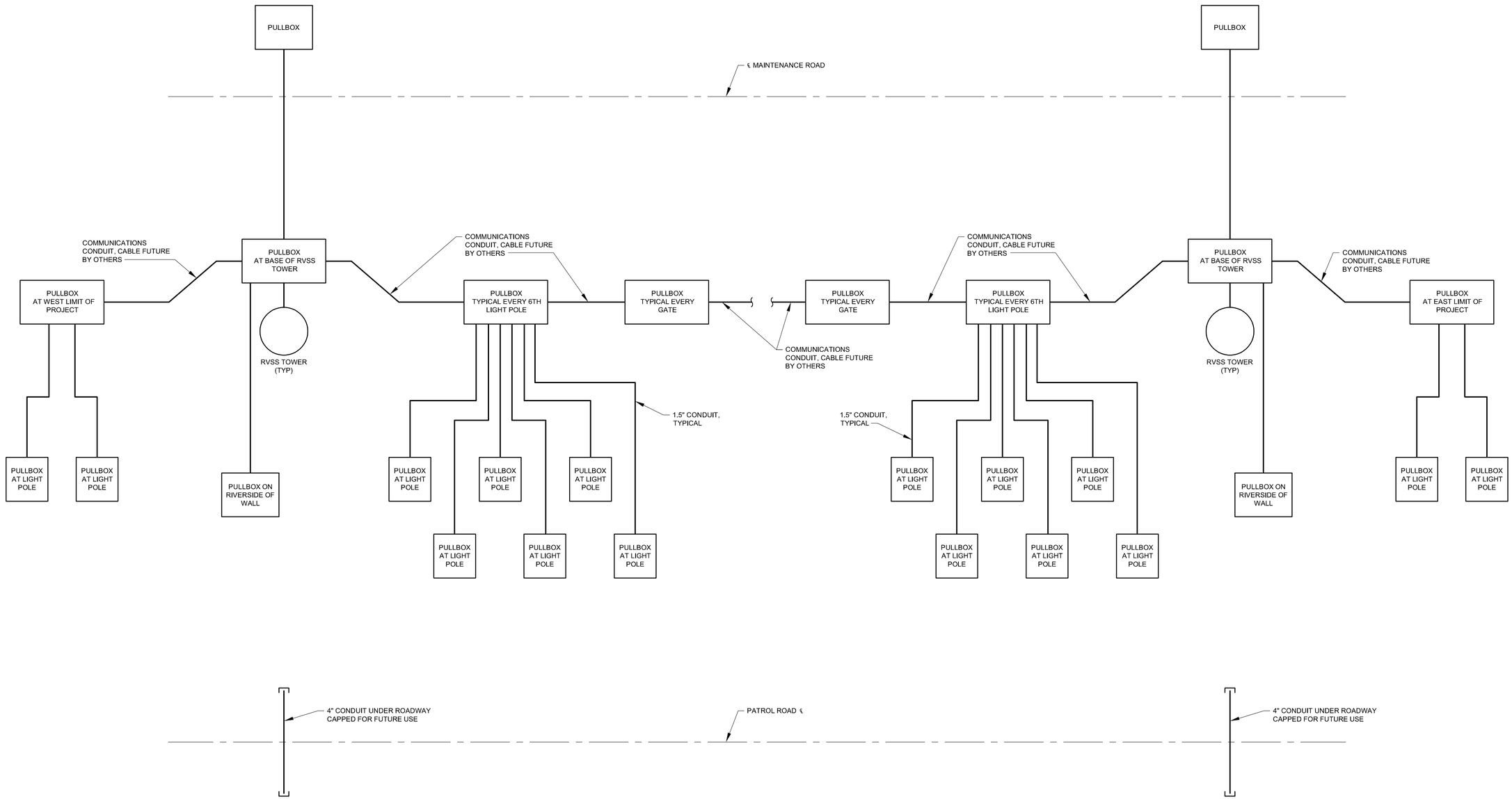
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

ROV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL AND COMMUNICATION NOTES

SHEET ID
ROMA
E-002

NOTES:

1. DUCTBANK AND QUANTITY AND SIZE OF CONDUITS BY CONTRACTOR TO BE COORDINATED WITH OWNER.




## CONCEPTUAL OVERALL COMMUNICATIONS CONDUIT INFRASTRUCTURE

NO SCALE

US Army Corps of Engineers ®

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|---|---|---|

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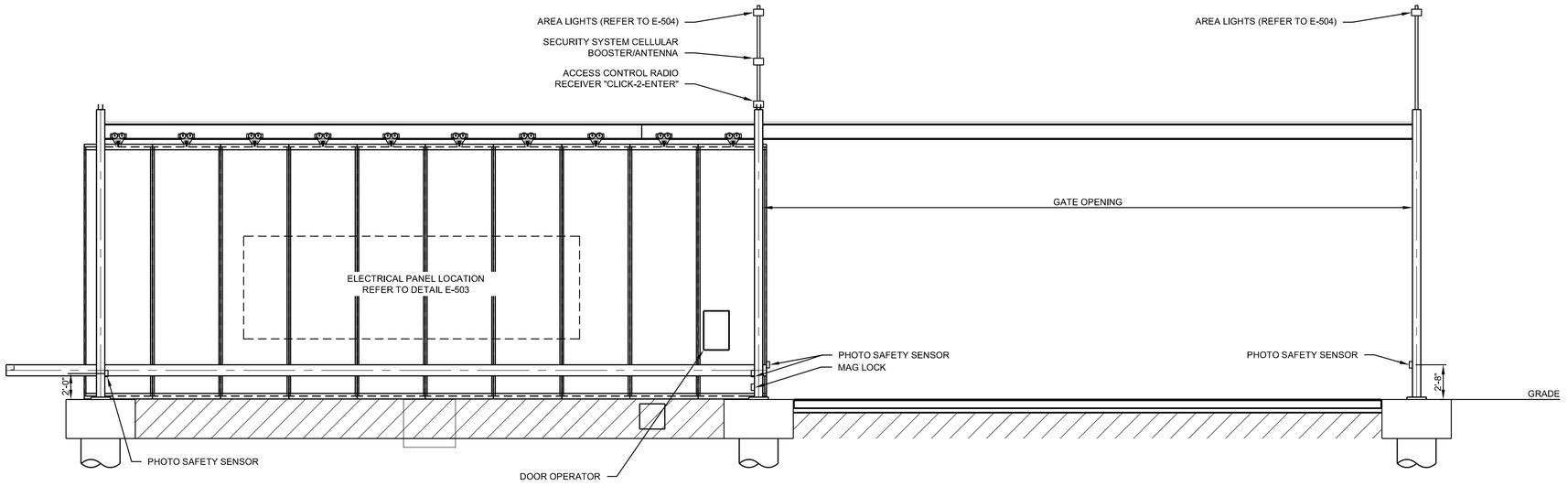
DALLAS, TX, 75252

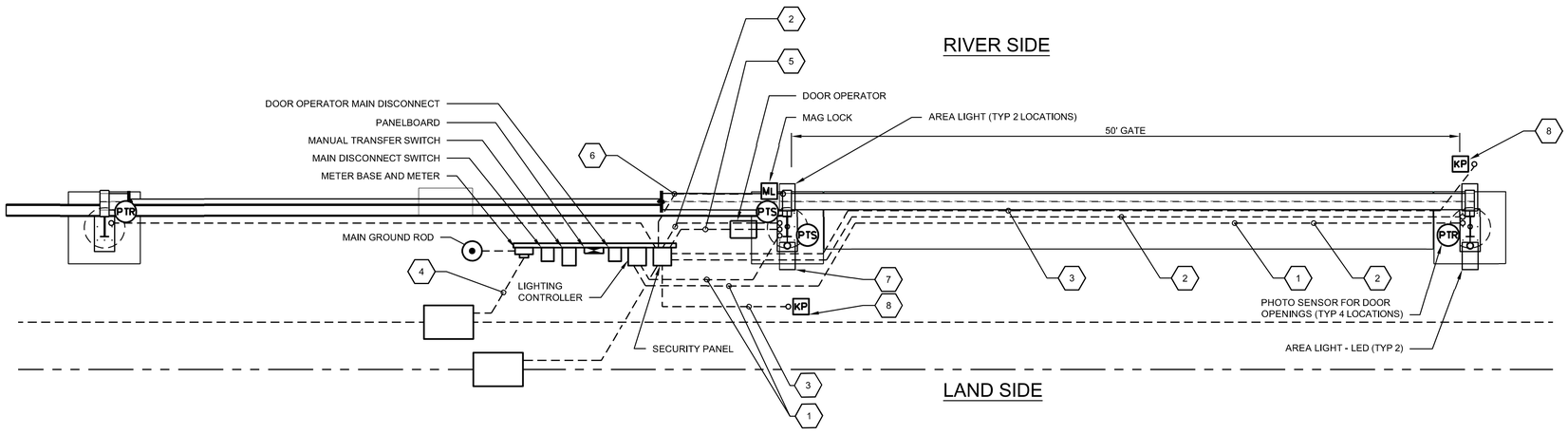

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
CONCEPTUAL OVERALL CAMERA CONDUIT INFRASTRUCTURE

SHEET ID
ROMA
E-101




## GATE PHOTOELECTRIC BEAM DEVICES MOUNTING HEIGHTS

SCALE: 3/16" = 1'-0"




## GATE ELECTRICAL LAYOUT - RIGHT SIDE LAYOUT

SCALE: 3/16" = 1'-0"

AT FULL SIZE

0 1 2 3 IN

0 1 2 3 4 5 6 7 8 cm

## GENERAL NOTES

1. RATING OF THE MANUAL TRANSFER SWITCH'S TRANSFER PANEL "QUICK COUPLING" SHALL BE COORDINATED WITH THE SIZE OF THE ANTICIPATED MOBILE EMERGENCY GENERATOR.
2. KEYPADS MAY NEED TO BE RE-LOCATED TO REFLECT ACTUAL SITE CONDITIONS.
3. MAGLOCK SHALL BE PLACED UNDER GATE OPERATOR.
4. UNLESS NOTED OTHERWISE, RUN UNDERGROUND CONDUITS LOCATED ALONG AND IN THE VICINITY OF THE GATE OPENING UNDER THE 4' WIDE x 8" DEEP GATE OPENING CONCRETE SLAB.

## XX KEYED NOTES

1. POWER FOR AREA LIGHTS - 1" SCHEDULE 80 - TO LIGHTING CONTACTOR.
2. CONDUIT FOR PHOTO SAFETY SENSOR - 1" SCHEDULE 80 - TO SECURITY.
3. CONDUIT FOR SECURITY KEYPAD - 1" SCHEDULE 80.
4. CONDUIT FOR CONNECTION TO RGV-06 POWER DUCTBANK SCHEDULE 80.
5. CONDUIT FOR "CLICK-TO-ENTER" AND CELLULAR ANTENNA SYSTEM - 1" SCHEDULE 80.
6. CONDUIT FOR MAGNETIC LOCK - 1" SCHEDULE 80.
7. FIXTURE IDENTIFIED SHALL BE CONNECTED TO BATTERY CIRCUIT. SEE DETAIL E-605.
8. PROVIDE GOOSENECK MOUNTING ARM AND CONCRETE BASE FOR MOUNTING OF KEYPAD. SEE CIVIL PLANS FOR EXACT LOCATION OF KEYPADS.

US Army Corps of Engineers ®

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|---|---|---|

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FILE NUMBER:

DESIGNED BY: M.J. HILL
DRAWN BY: D.A. NELSON
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SIZE: ANSI D

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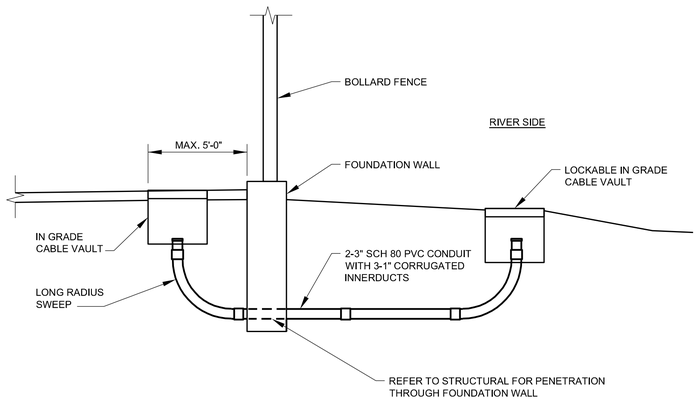
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL SINGLE GATE - PLAN VIEW
50 FEET SINGLE LEAF AUTOMATED GATE

SHEET ID
ROMA
E-102



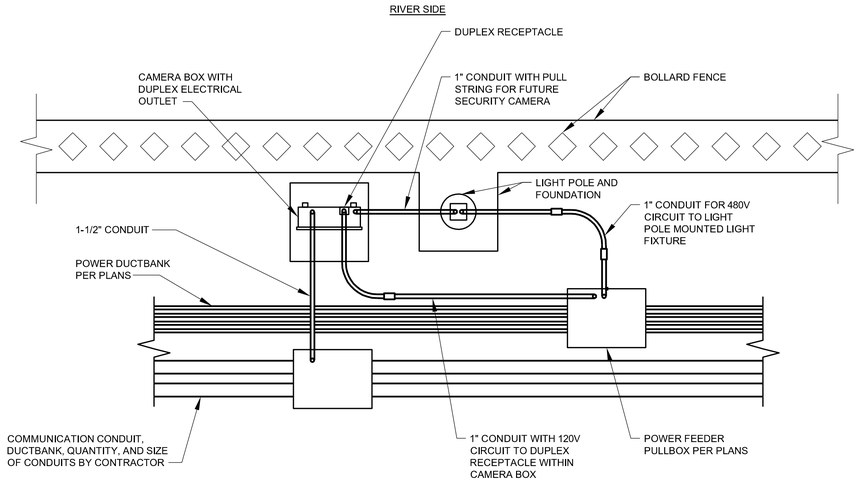

## SECTION

NOTES:

1. IN ADDITION TO PENETRATIONS FOR RVSS TOWERS PROVIDE AT BEGINNING AND END OF EACH CONTRACT WALL SEGMENT FOR FUTURE CONNECTIONS.

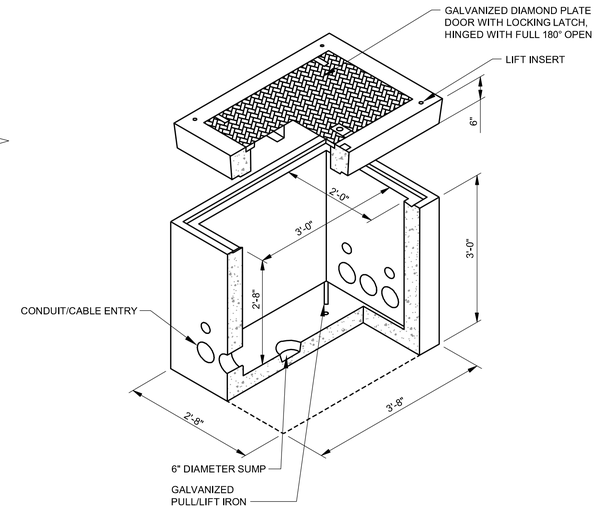
## COMMUNICATIONS CONDUIT ROUTING TO RIVERSIDE

NO SCALE



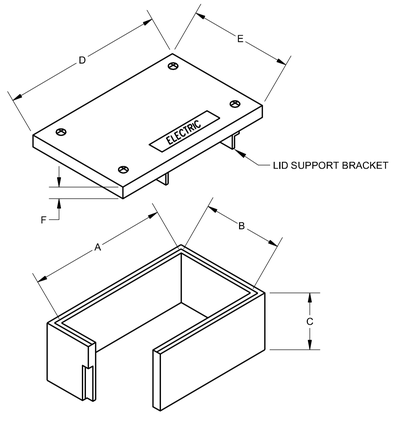

## TYPICAL PLAN VIEW AT LIGHT POLES

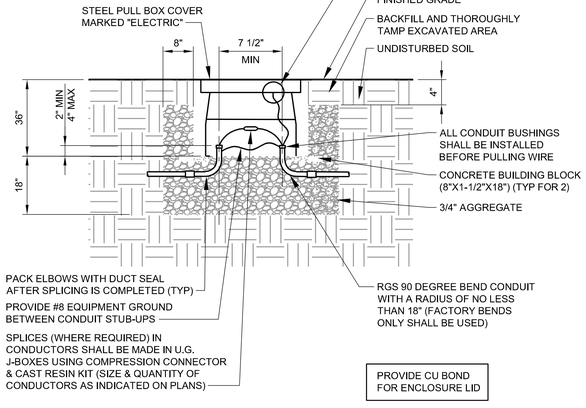
NO SCALE




## UNDERGROUND COMMUNICATION CABLE VAULT DETAIL (RIVER SIDE)

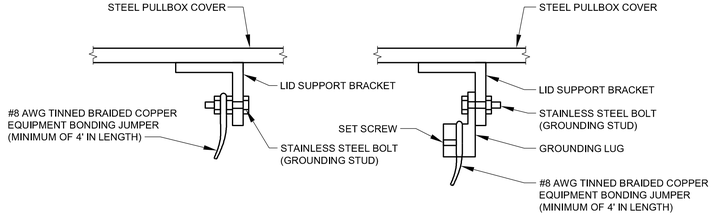
NO SCALE




NOTES:

1. INSTALL A 1/4"-20 NC X 3/4" STAINLESS STEEL GROUNDING STUD TO THE LID SUPPORT MEMBER(S) ON THE BOTTOM OF LID BY DRILLING A HOLE THROUGH THE "L", "C", OR "T"-SHAPED SUPPORT MEMBER. SECURE GROUNDING STUD AND BONDING JUMPER WITH TWO (2) STAINLESS STEEL NUTS AND FLAT WASHERS.
2. SECURE GROUNDING LUG TO THE LID SUPPORT MEMBERS TO THE BOTTOM OF LID BY DRILLING A HOLE THROUGH THE "L", "C", OR "T"-SHAPED SUPPORT MEMBER AND INSTALLING A 1/4"-20 NC X 3/4" STAINLESS STEEL GROUND STUD. INSERT BONDING JUMPER INTO GROUNDING LUG AND SECURE WITH SET SCREW.




## TYPICAL HANDHOLE / PULL BOX DETAIL (COMM AND POWER, SECURE SIDE)

NO SCALE

US Army Corps of Engineers ®

DATE | DESCRIPTION | MARK

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DRAWN BY: D.A. NELSON
CHECKED BY:
SUBMITTED BY:
SIZE: ANSI D

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GALVESTON, TX 77553-1229

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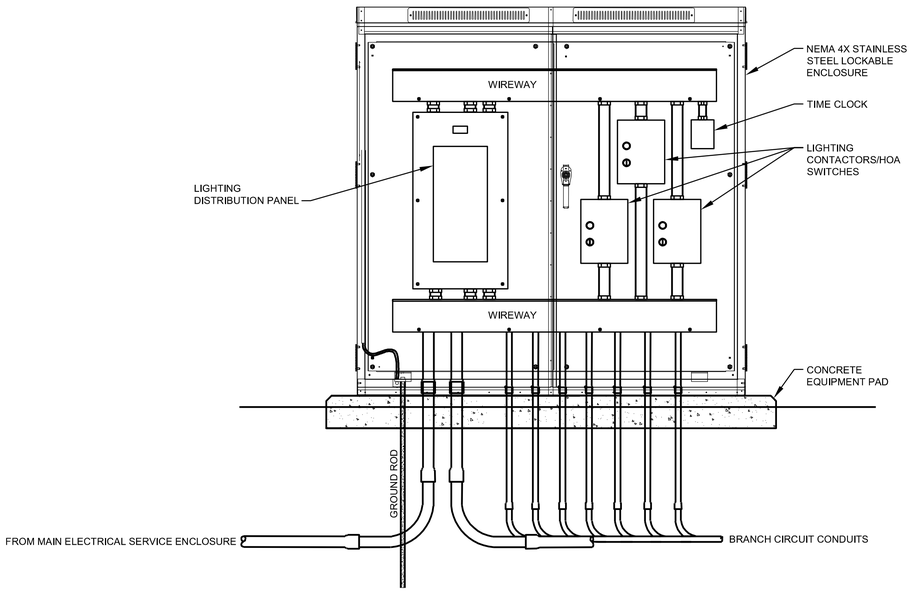
DALLAS, TX, 75252

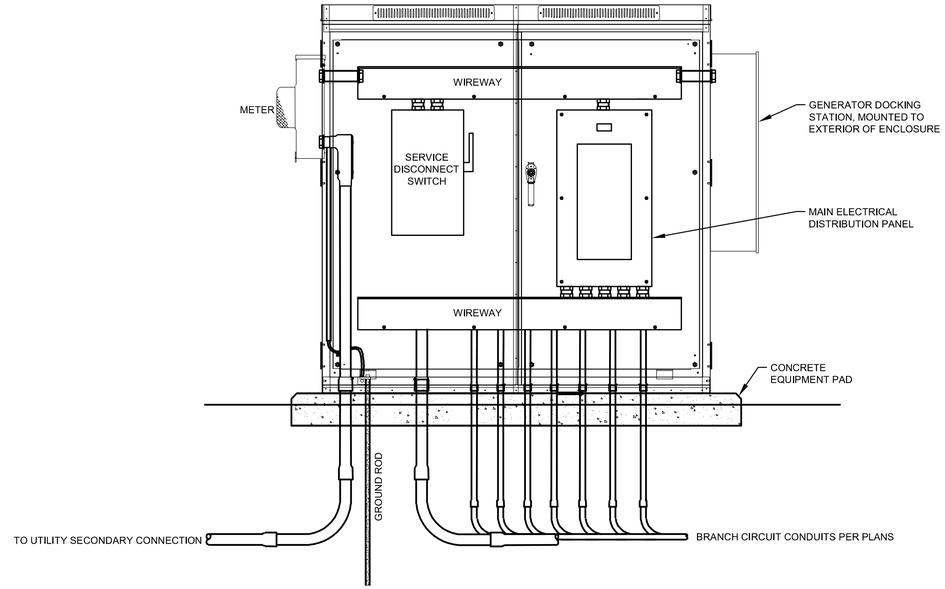
RGV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
CONDUIT ROUTING DETAILS

SHEET ID
ROMA
E-501



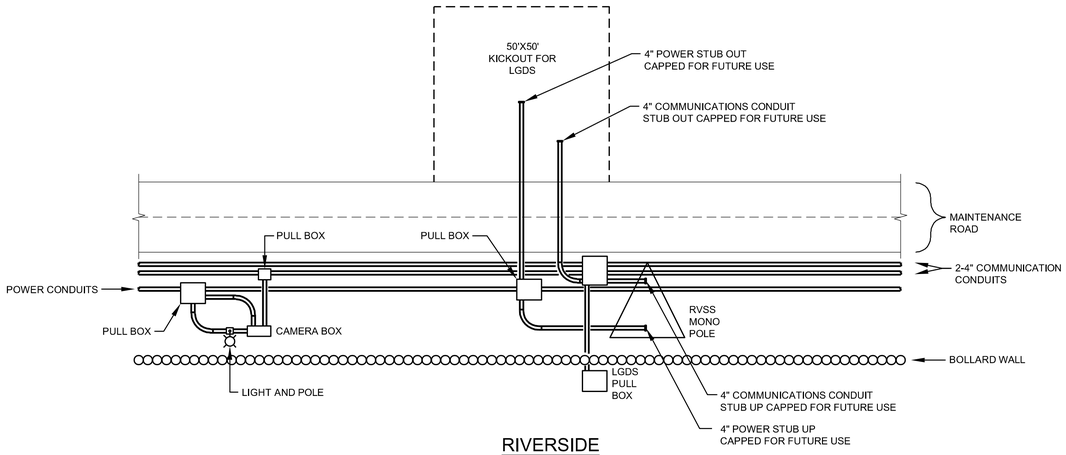

## TYPICAL LIGHTING DISTRIBUTION ENCLOSURE

NOT TO SCALE




## TYPICAL UTILITY CONNECTION POINT ELECTRICAL SERVICE ENCLOSURE

NOT TO SCALE




## RVSS TOWER TYPICAL PLAN VIEW

NOT TO SCALE

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|
| | | |

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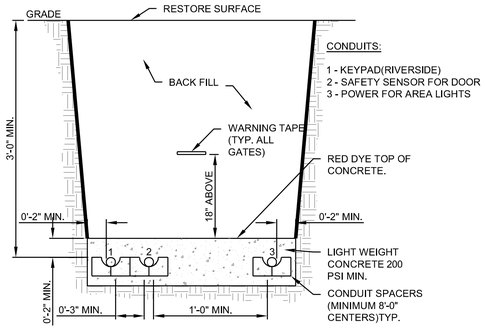
DRAWN BY: D.A. NELSON
CHECKED BY:
SUBMITTED BY:
ISSUED DATE:
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

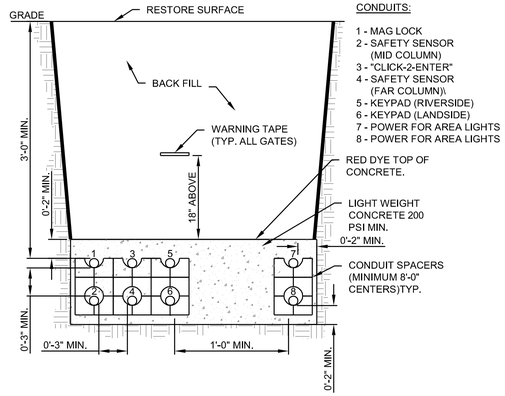
RGV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
RVSS TOWER YARD EQUIPMENT DETAILS

SHEET ID
ROMA
E-502



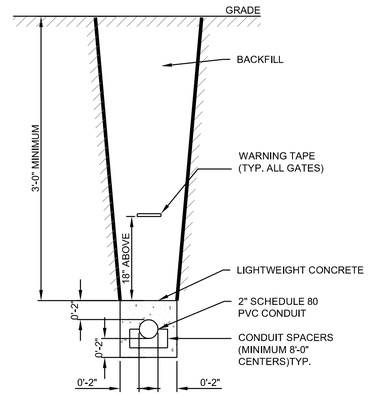

## GATE POWER, SECURITY, AND CONTROLS DUCT BANK SECTION

NO SCALE



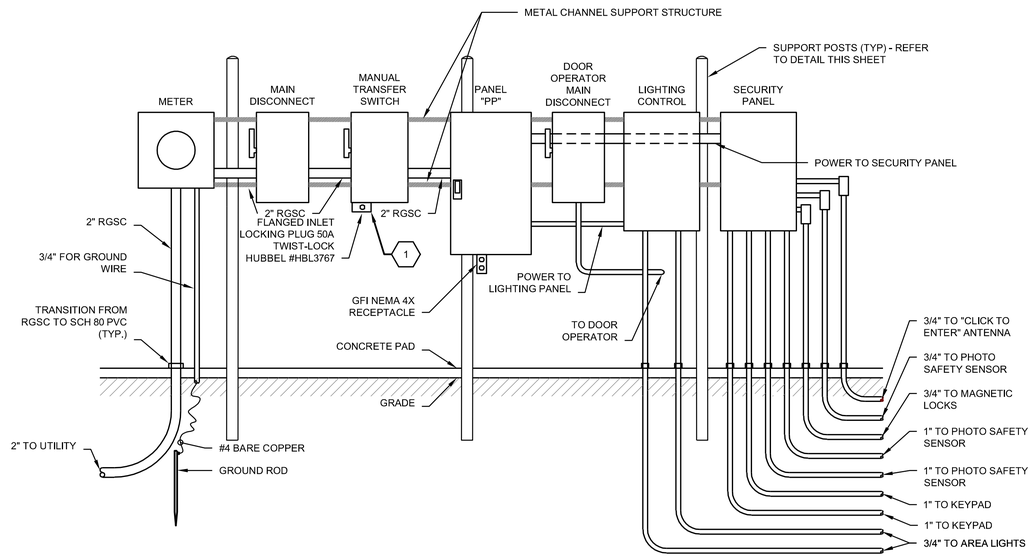

## GATE POWER, SECURITY, AND CONTROLS DUCT BANK SECTION

NO SCALE



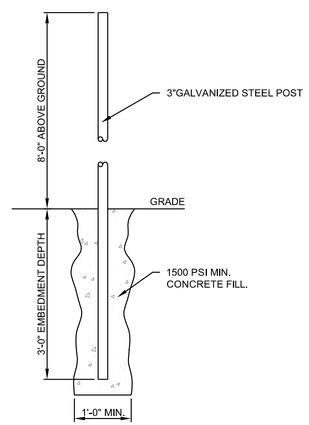

## ELECTRICAL SERVICE DUCT BANK

NO SCALE




## GATE POWER, SECURITY, AND CONTROLS PANEL ELEVATION DETAIL

NO SCALE




## MOUNTING POLE DETAIL

NO SCALE

## GENERAL NOTES

1. PROVIDE SUPPORT POSTS AND UNISTRUT MOUNTING RAILS AS REQUIRED. ALL STRUCTURE, CLAMPS AND ACCESSORIES SHALL BE CORROSION RESISTANT.
2. ALL BELOW GRADE CONDUIT SHALL BE SCHEDULE 80 PVC.
3. ALL ABOVE GRADE CONDUIT SHALL BE RIGID GALVANIZED STEEL CONDUIT.
4. ALL HARDWARE SHALL BE STAINLESS STEEL, WHERE POSSIBLE.
5. UNDERGROUND CONDUITS SHALL BE CONTINUOUSLY MARKED WITH FOIL-BACKED ELECTRICAL WARNING TAPE "CAUTION - ELECTRICAL LINE BURIED BELOW" WARNING TAPE SHALL BE INSERTED 18" ABOVE THE CENTER OF THE TOP OF THE CONDUITS.
6. WHERE ELECTRICAL EQUIPMENT IS EXPOSED TO THE ENVIRONMENT PROVIDE NEMA 4X ENCLOSURES. PROVIDE WEATHERPROOF ENCLOSURES FOR RECEPTACLES.

## KEYED NOTES

1. THE FLANGED INLET LOCKING PLUG SHALL BE INSTALLED WITH A GASKET BETWEEN THE PLUG AND THE ENCLOSURE

US Army Corps of Engineers ®

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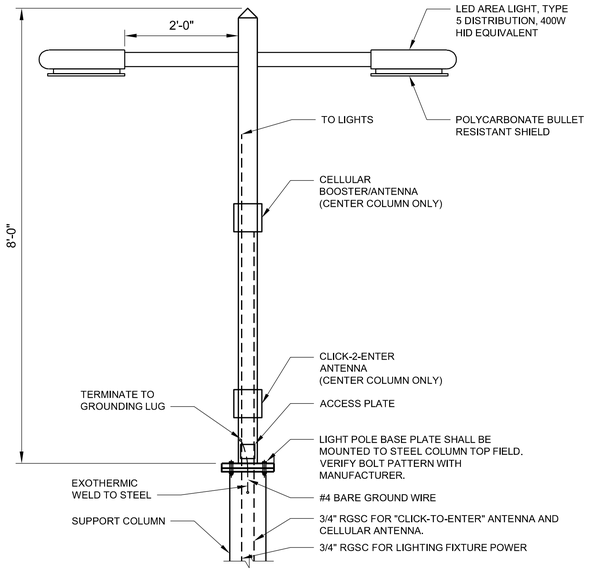
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

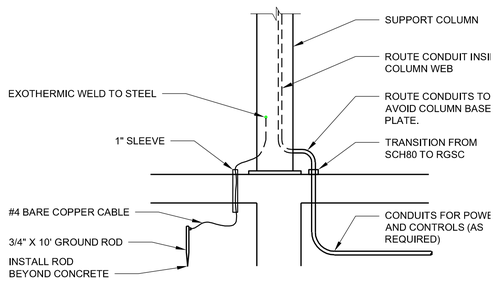
ROV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL DETAILS - SHEET 1
50 FEET SINGLE LEAF AUTOMATED GATE

SHEET ID
ROMA
E-503



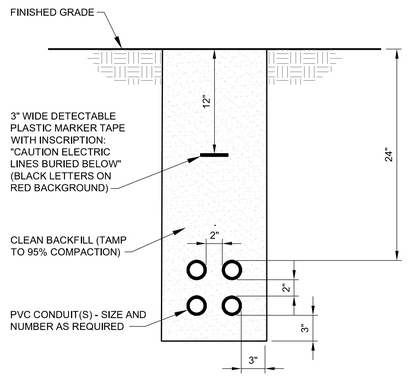

## GATE LIGHT POLE DETAIL

NO SCALE



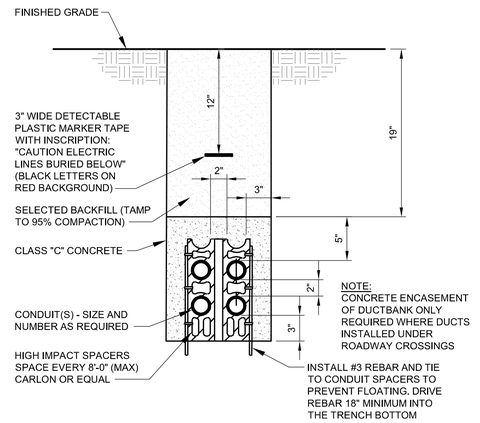

## GATE POLE DETAIL AT COLUMN BASE

NO SCALE



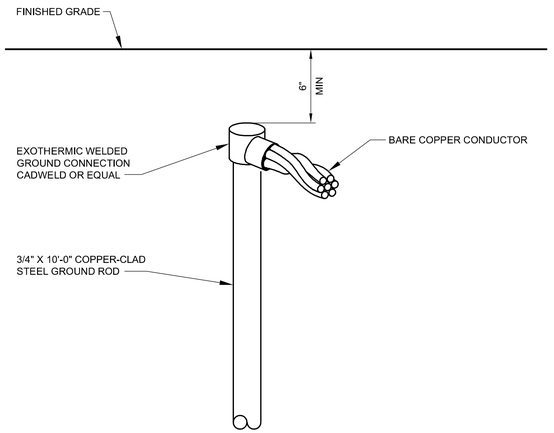

## TYPICAL DIRECT BURIED DUCTBANK DETAIL

NO SCALE



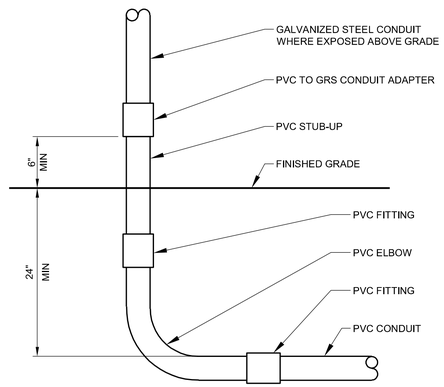

## TYPICAL CONCRETE ENCASED DUCTBANK DETAIL

NO SCALE




## TYPICAL GROUND ROD DETAIL

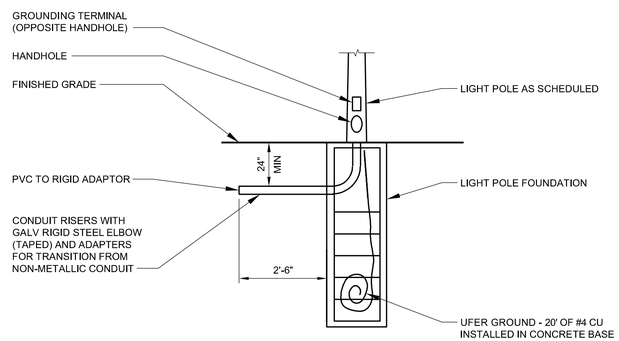
NO SCALE




NOTE:
WHERE CONDUITS ARE RUN IN SLAB, THE 24" DIMENSION DOES NOT APPLY.

## TYPICAL CONDUIT STUB-UP DETAIL

NO SCALE




## TYPICAL LIGHT POLE GROUNDING DETAIL

NO SCALE

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DRAWN BY: D.A. NELSON
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SUBMITTED BY:
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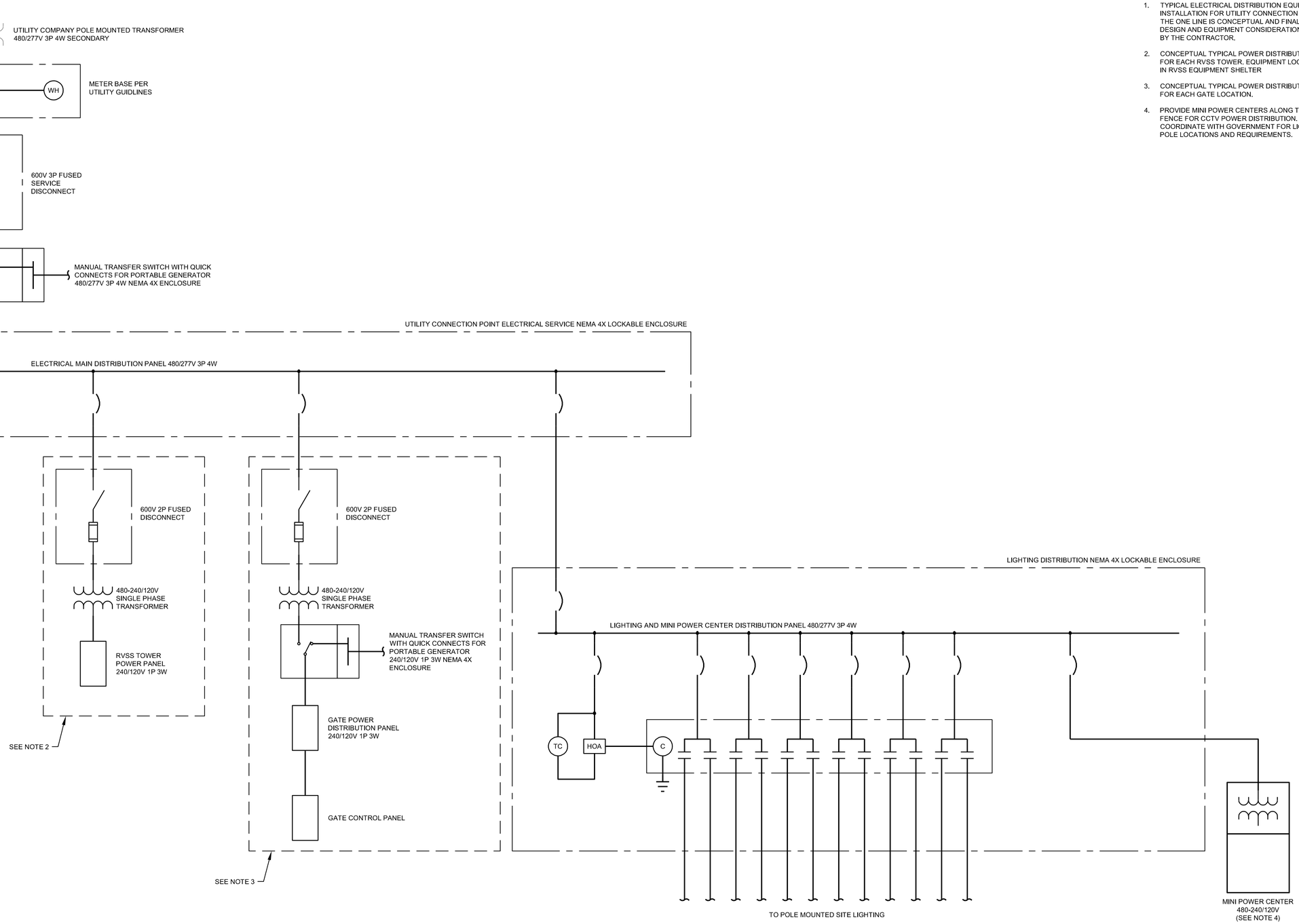
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL DETAILS - SHEET 2
50 FEET SINGLE LEAF AUTOMATED GATE

SHEET ID
ROMA
E-504




NOTES:

1. TYPICAL ELECTRICAL DISTRIBUTION EQUIPMENT INSTALLATION FOR UTILITY CONNECTION POINT. THE ONE LINE IS CONCEPTUAL AND FINAL DESIGN AND EQUIPMENT CONSIDERATIONS ARE BY THE CONTRACTOR.
2. CONCEPTUAL TYPICAL POWER DISTRIBUTION FOR EACH RVSS TOWER. EQUIPMENT LOCATED IN RVSS EQUIPMENT SHELTER
3. CONCEPTUAL TYPICAL POWER DISTRIBUTION FOR EACH GATE LOCATION.
4. PROVIDE MINI POWER CENTERS ALONG THE FENCE FOR CCTV POWER DISTRIBUTION. COORDINATE WITH GOVERNMENT FOR LIGHT POLE LOCATIONS AND REQUIREMENTS.

# CONCEPTUAL UTILITY SERVICE POINT ELECTRICAL ONE-LINE DIAGRAM

NO SCALE

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|

ISSUED DATE:
SOLICITATION NO:
CONTRACT NO.:
FILE NUMBER:
DESIGNED BY: M.J. HILL
DRAWN BY: D.A. NELSON
CHECKED BY:
SUBMITTED BY:
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT, RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
CONCEPTUAL ONE-LINE DIAGRAM

SHEET ID
ROMA
E-601

## Panel: PP

Location:
Supply From: MTS
Mounting: Surface
Enclosure: NEMA 4X

Volts: 240/120V
Phases: 1 P
Wires: 3 Wire

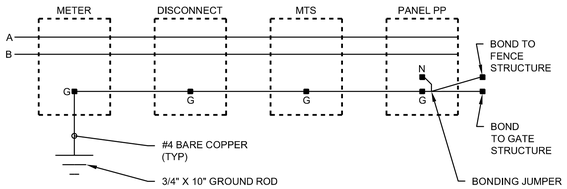
A.I.C Rating: 10,000
Mains Type: MCB
Mains Rating: 200A
MCB Rating: 200A

| CKT | Circuit Description | Trip | Poles | A | | B | | Poles | Trip | Circuit Description | CKT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | DOOR OPTR (7.5HP) | 70A | 2P | 2460 | 0 | | | 2P | 20A | SURGE SUPPRESSOR | 2 |
| 3 | - | - | - | | | 2460 | 0 | - | - | - | 4 |
| 5 | GFCI OUTLETS | 20A | 1P | 180 | 400 | | | 1P | 20A | SECURITY PANEL | 6 |
| 7 | LIGHTS | 20A | 1P | | | 723 | 1000 | 1P | 20A | SECURITY PANEL | 8 |
| 9 | LIGHTS | 20A | 1P | 241 | - | | | 1P | 20A | Spare | 10 |
| 11 | Spare | 20A | 1P | | | - | - | 1P | 20A | Spare | 12 |
| 13 | Spare | 20A | 1P | - | - | | | 1P | 20A | Spare | 14 |
| 15 | Spare | 20A | 1P | | | - | - | 1P | 20A | Spare | 16 |
| 17 | Spare | 20A | 1P | | | | | 1P | 20A | Spare | 18 |
| 19 | Spare | 20A | 1P | | | - | - | 1P | 20A | Spare | 20 |
| 21 | Spare | 20A | 1P | - | - | | | 1P | 20A | Spare | 22 |
| 23 | Spare | 20A | 1P | | | - | - | 1P | 20A | Spare | 24 |
| | | | Total Load: | 3281 | VA | 4183 | VA | | | | |
| | | | Total Amps: | 27.3 | Amps | 34.9 | Amps | | | | |

| Load Classification | Connected Load | Demand Factor | Estimated Demand | Panel Totals |
|---|---|---|---|---|
| Power | 1303 | 100% | 1303 | Total Conn. Load (VA): 7187 |
| Lighting | 964 | 125% | 1205 | Total Est. Demand (VA): 7428 |
| Motor/HVAC | 4920 | 100% | 4920 | Total Amps: 31.0 |
| | | | | |

## GATE ELECTRICAL PANEL SCHEDULE

NO SCALE




## GATE GROUNDING DETAIL

NO SCALE

| LUMINAIRE SCHEDULE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TYPE | GENERAL DESCRIPTION | LIGHT SOURCE DATA | | | | DRIVER/BALLAST | | POWER DATA | | |
| | | LAMP TYPE | QTY x WATTS/LAMP | LAMP CODE/LED MODULE | LED DELIVERED LUMENS | CONTROL TYPE | DIMMING | SUPPLY VOLT | WATTS PER FIXT. | NOTES |
| | POLE MOUNTED LIGHT FIXTURE, 27FT POLE. REFERENCE SPECIFICATIONS FOR REQUIREMENTS FOR POLE, FIXTURE, AND ACCESSORIES | LED | BY CONTRACTOR | FURNISHED WITH FIXTURE | BY CONTRACTOR | NA | 0-10V | 480V | 1200W MAX | |

## SITE LUMINAIRE SCHEDULE

NO SCALE

## GENERAL NOTES

1. ALL ELECTRICAL EQUIPMENT SHALL BE RATED NEMA 4X
2. ALL ELECTRICAL EQUIPMENT SHALL BE RATED FOR 10KAIC MINIMUM.
3. ALL CONDUCTORS SHALL BE #12 AWG UNLESS NOTED OTHERWISE

## CALCULATIONS

ASSUMPTIONS:

TRANSFORMER SIZE: 25kVA
IMPEDANCE: 1.58 Z (ESTIMATED)
UPSTREAM BUS CAPACITY: INFINATE
DISTANCE FROM TRANSFORMER: 50FT

SHORT CIRCUIT CURRENT:

IFL = (XFMR SIZE x 1000) / (VOLTAGE(LINE-LINE))

IFL = (25 x 1000) / (240) = 104.16A

IsC = IFL / %Z

IsC = (104.16A) / (.0158) = 6592 AMPS MAX

M = 1 / (1+F)

F = (2x(DISTANCE) x IsC) / ((CONSTANT) x (VOLTAGE))

F = (2 x 50FT x 6592A) / (13923 x 240) = 0.1972

M = 1 / (1 + 0.1972) = .8352

IsC(actual) = (6592 x 0.8352) = 5506A

PANEL BOARD MINIMUM
AIC = 10K AIC

## ABBREVIATIONS

M = MULTIPLIER
F = FACTOR
IsC = SHORT CIRCUIT CURRENT

US Army Corps of Engineers ®

DESCRIPTION | DATE | MARK

ISSUED DATE:
SOLICITATION NO:
CONTRACT NO.:
FILE NUMBER:
DESIGNED BY: M.J. HILL
DRAWN BY: D.A. NELSON
CHECKED BY:
SUBMITTED BY:
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

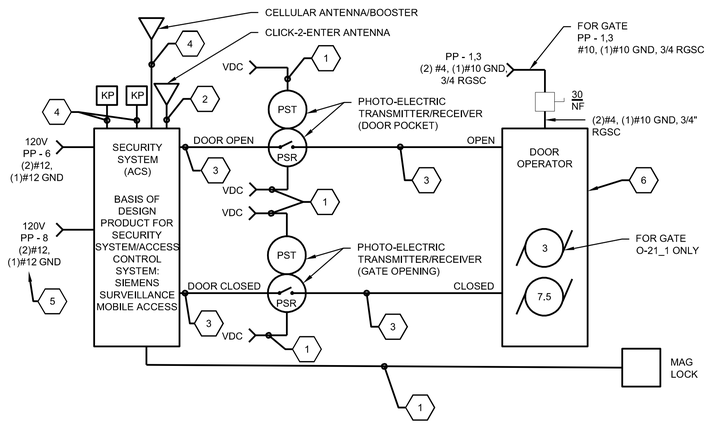
RGV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL SCHEDULES & DIAGRAMS
50 FEET SINGLE LEAF AUTOMATED GATE

SHEET ID
ROMA
E-602

| LUMINAIRE SCHEDULE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TYPE | GENERAL DESCRIPTION | LIGHT SOURCE DATA | | | | DRIVER/BALLAST | | POWER DATA | | | |
| | | LAMP TYPE | QTY x WATTS/LAMP | LAMP CODE/LED MODULE | LED DELIVERED LUMENS | CONTROL TYPE | DIMMING | SUPPLY VOLT | WATTS PER FIXT. | MANUFACTURER AND CATALOG NUMBER SERIES | NOTES |
| A | DSX1 LED P9 50K T5W MVOLT (LITHONIA LIGHTING) | LED | NA | FURNISHED WITH FIXTURE | 28805 | NA | 0-10V | 120V | 241 | DSX1 LED P9 50K T5W MVOLT (LITHONIA LIGHTING) | |

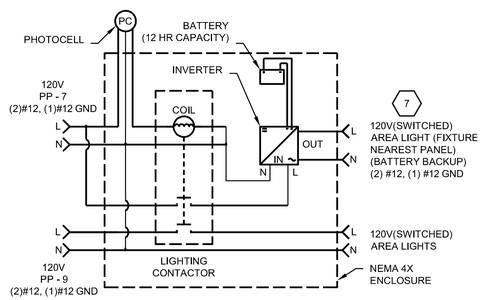
## GATE LUMINAIRE SCHEDULE

NO SCALE




## GATE CONTROL DIAGRAM

NO SCALE




## GATE LIGHTING CONTACTOR DIAGRAM

NO SCALE

## SHEET NOTES

1. 2 #12 (POWER) FROM SECURITY PANEL
2. 2 #12 (POWER) + 2 #16 (DOOR OPEN SIGNAL)
3. 2 #16 (CONTROL)
4. SPECIALITY CABLE PER MANUFACTURER
5. POWER FOR CELLULAR ANTENNA BOOSTER. EXTEND CONDUCTORS/CONDUIT TO DEVICE LOCATION.
6. BASIS OF DESIGN PRODUCT FOR DOOR OPERATOR IS: DOOR KING 9575 W/ HEAVY DUTY HOUSING OPTION.
7. CONNECT TO ONE FIXTURE NEAREST TO PANELS (LANDSIDE)

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|

ISSUED DATE:
SOLICITATION NO:
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FILE NUMBER:
DESIGNED BY: M.J. HILL
DRAWN BY: D.A. NELSON
CHECKED BY:
SUBMITTED BY:
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

ROV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL CONTROL SCHEMATIC
50 FT. SINGLE LEAF AUTOMATED GATE

SHEET ID
ROMA
E-603

US Army Corps
of Engineers ®
GALVESTON DISTRICT

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17218 Preston Road, Suite 3300
Dallas, Texas 75252
p: 469-850-0327
WWW.ETEGRA.COM

# RGV 06 - BORDER INFRASTRUCTURE CONSTRUCTION PROJECT
# RIO GRANDE VALLEY (RGV) CONSTRUCTION OF BOLLARD FENCE


## RIO GRANDE CITY, TEXAS

SOLICITATION NO.:

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|

DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
SIZE: ANSI D

ISSUED DATE:
SOLICITATION NO:
CONTRACT NO.:
FILE NUMBER:

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX., 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PROJECT LOCATION

SHEET ID
RGC
G-000

*US Army Corps of Engineers ®*
GALVESTON DISTRICT

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Dallas, Texas 75252
p: 469-850-0327
WWW.ETEGRA.COM

# RGV 06 - BORDER INFRASTRUCTURE CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV) CONSTRUCTION OF BOLLARD FENCE RIO GRANDE CITY BASE


RIO GRANDE CITY, TEXAS

NORTH

## SOLICITATION NO.:
## CONTRACT NO.:
## ISSUE DATE:

## INDEX



US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|
| | | |

DESIGNED BY: A.PONCHAI
DRAWN BY: A.PONCHAI
CHECKED BY: B.PRESTON
SUBMITTED BY: B.PRESTON
SIZE: ANSI D
ISSUED DATE:
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD. SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

COVER SHEET

SHEET ID
RGC
G-001

## GENERAL ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS INDICTED MAY APPEAR ON THESE DRAWINGS

| | |
|---|---|
| BOTTOM | BOT |
| CENTERLINE | CL |
| CORRUGATED METAL PIPE | CMP |
| COLUMN | COL |
| CONCRETE | CONC |
| DIAMETER | DIA |
| DOWEL | DWL |
| DRAWINGS | DWG(S) |
| EACH WAY | EW |
| ELEVATION | EL |
| ELECTRICAL | ELEC |
| EDGE OF PAVEMENT | EP |
| EXPANSION | EXP |
| FIRE HYDRANT | FH |
| FLOWLINE | FL |
| GALVANIZED | GALV |
| GATE VALVE | GV |
| GUTTER | G |
| HORSEPOWER | HP |
| HORIZONTAL | HORIZ |
| INSIDE DIAMETER | ID |
| IRON ROD | IR |
| LEFT | LT |
| MANHOLE | MH |
| MAXIMUM | MAX |
| MINIMUM | MIN |
| MISCELLANEOUS | MISC |
| NUMBER | # |
| NUMBER | NO |
| ON CENTER | OC |
| OUTSIDE DIAMETER | OD |
| PAVEMENT | PVMT |
| POINT OF CURVATURE | PC |
| POINT OF INTERSECTION | PI |
| POINT OF TANGENCY | PT |
| POLYVINYL CHLORIDE | PVC |
| RADIUS | R |
| REMOVE | REMOV |
| REINFORCING | REINF |
| REINFORCED CONCRETTE PIPE | RCP |
| RIGHT | RT |
| RIGHT OF WAY | ROW |
| SANITARY | SAN |
| SCHEDULE | SCHED |
| SECTION | SECT |
| SILT FENCE | SF |
| STAINLESS STEEL | SS |
| STORM WATER POLLUTION PREVENTION | SWPP |
| SPECIFICATIONS | SPECS |
| STORM | STM |
| SEWER | SEW |
| TOP | T |
| TOP OF | T/ |
| TYPICAL | TYP |
| UNLESS OTHERWISE NOTED | UON |
| VARIES | VAR |
| VERTICAL | VERT |
| WITH | W/ |
| WELDED WIRE FABRIC | WWF |

## GENERAL SYMBOLS LIST

- BREAK LINE
- TREE LINE
- OVERHEAD COMMUNICATION LINE (Cx)
- UNDERGROUND COMMUNICATION LINE (Cx)
- STORM DRAINAGE LINE (SDx)
- WATER OR IRRIGATION LINE (24" & SMALLER LINE)
- EXISTING BARBED WIRE FENCE
- EXISTING ELECTRIC (OVERHEAD) (E)
- ELECTRIC (UNDERGROUND) (E)
- OIL OR PETROLEUM LINE (O)
- TELEPHONE LINE
- EXISTING WATER LINE (Wx)
- SURVEY CONTROL MONUMENT
- SIGN
- DITCH
- DITCH CENTER LINE
- ROADWAY
- ENFORCEMENT ZONE LINE (RW)
- EDGE OF EXISTING ASPHALT
- FIRE HYDRANT
- DOWN GUY
- TELEPHONE/SIGNAL PULL BOX
- PROPERTY CORNER
- CULVERT
- PULL BOX FOR POWER/CONTROL
- PULL BOX FOR TELEPHONE/INSTRUMENTATION
- POSSIBLE KEY PAD LOCATION
- GATE PIER FOUNDATION
- R.O.W. — RIGHT-OF-WAY
- TRAFFIC FLOW PATTERN
- EXISTING RETAINING WALL

- PROPOSED GATE
- EXISTING BORDER FENCE CORNER
- 31 — EXISTING CONTOUR
- 34 — PROPOSED CONTOUR
- PROPOSED BOLLARD FENCE
- SF — SILT FENCE
- MAIL — MAILBOX
- GP — GUARD POST (BOLLARD)
- BOREHOLE
- PP/XFMR — POWER POLE WITH TRANSFORMER
- PIPE — VERTICAL PIPE
- CDC — COMMUNICATION DROP CONNECTION
- C-RISER — COMMUNICATION RISER
- C-UNG — UNDERGROUND COMMUNICATION MARKER
- CAM — SECURITY CAMERA
- UTILITY POLE
- EDC — ELECTRIC DROP CONNECTION
- GROUND ROD
- LIGHT
- LIGHT POLE
- XXX — ELECTRIC METER
- ELECTRIC PANEL
- SWITCH
- JUNCTION BOX
- WV — WATER VALVE
- WATER METER
- IV — IRRIGATION VALVE
- EVERGREEN TREE
- DECIDUOUS TREE
- ASPHALT ROADWAY
- CONCRETE
- AGGREGATE ROADWAY

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|
| | | |

DESIGNED BY: X
DRAWN BY: X
CHECKED BY: X
SUBMITTED BY: X
SIZE: ANSI D
ISSUED DATE:
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FILE NUMBER:

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

# LEGEND AND ABBREVIATIONS

SHEET ID
RGC
G-002

| No. | Description | Station | Latitude | Longtitude |
|---|---|---|---|---|
| 1 | Base Start | 10+00.00' | N26° 22' 27.43" | W98° 48' 44.97" |
| 2 | PI | 12+49.47' | N26° 22' 27.67" | W98° 48' 42.24" |
| 3 | PI | 14+12.20' | N26° 22' 26.72" | W98° 48' 40.80" |
| 4 | PI | 23+92.91' | N26° 22' 20.45" | W98° 48' 32.56" |
| 5 | PI | 36+14.30' | N26° 22' 12.13" | W98° 48' 22.82" |
| 6 | PI | 41+63.60' | N26° 22' 08.14" | W98° 48' 18.70" |
| 7 | PI | 44+85.60' | N26° 22' 06.02" | W98° 48' 16.06" |
| 8 | PI | 47+26.31' | N26° 22' 05.34" | W98° 48' 13.53" |
| 9 | PI | 48+30.31' | N26° 22' 04.80" | W98° 48' 12.55" |
| 10 | PI | 49+42.31' | N26° 22' 03.91" | W98° 48' 11.82" |
| 11 | PI | 50+30.31' | N26° 22' 03.08" | W98° 48' 11.53" |
| 12 | PI | 51+54.23' | N26° 22' 02.07" | W98° 48' 10.75" |
| 13 | PI | 52+39.44' | N26° 22' 01.53" | W98° 48' 10.03" |
| 14 | PI | 54+16.63' | N26° 22' 00.28" | W98° 48' 08.67" |
| 15 | PI | 55+23.43' | N26° 21' 59.31" | W98° 48' 08.19" |
| 16 | PI | 56+65.98' | N26° 21' 58.19" | W98° 48' 07.24" |
| 17 | PI | 59+27.04' | N26° 21' 56.48" | W98° 48' 05.09" |
| 18 | PI | 61+80.52' | N26° 21' 54.67" | W98° 48' 03.15" |
| 19 | PI | 64+98.66' | N26° 21' 52.11" | W98° 48' 01.12" |
| 20 | PI | 66+68.05' | N26° 21' 50.54" | W98° 48' 00.44" |
| 21 | PI | 68+79.71' | N26° 21' 49.14" | W98° 47' 58.72" |
| 22 | PI | 78+07.80' | N26° 21' 41.34" | W98° 47' 53.32" |
| 23 | PI | 78+66.75' | N26° 21' 40.94" | W98° 47' 52.84" |
| 24 | PI | 81+61.21' | N26° 21' 39.68" | W98° 47' 49.92" |
| 25 | Base End | 86+79.99' | N26° 21' 37.87" | W98° 47' 44.58" |

E1 FENCE POB, EOP AND PI LOCATIONS
SCALE: NTS

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|
| | | |

DESIGNED BY: X
DRAWN BY: X
CHECKED BY: X
SUBMITTED BY: X
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US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

FENCE PI LOCATIONS
STA. 10+00.00 - 86+38.00

SHEET ID
RGC
G-005

A1 KEYPLAN
SCALE: 1" = 300'-0"

0 300 600 1" = 300' - 0"

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|

DESIGNED BY: X
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US ARMY CORPS OF ENGINEERS
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ETEGRA
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DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

KEYPLAN
STA. 10+00.00 - 85+34.00

SHEET ID
RGC
G-004

## GENERAL:

1. ANY AND ALL DAMAGE TO EXISTING ROADS, CONCRETE LINED DITCH, FENCE UTILITIES AND ALL OTHER EXISTING STRUCTURES RESULTING FROM THE CONTRACTOR'S CONSTRUCTION SHALL BE REPLACED AND REPAIRED TO ORIGINAL CONDITION OR BETTER AND TO THE SATISFACTION OF THE COR AT THE EXPENSE OF THE CONTRACTOR.
2. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWING OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND / OR GREATER QUANTITY. STRENGTH OR SIZE INDICATED, SPECIFIED, OR NOTED SHALL BE PROVIDED.
3. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT NOT LIMITED TO,THE ADDITION OF WHATEVER TEMPORARY BRACING, SHORING, GUYS OR TIE-DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER COMPLETION OF THE PROJECT.
4. THE CONTRACTOR , AT HIS OWN EXPENSE, SHALL RESPOND TO COMPLAINTS REGARDING DUST AND NOISE POLLUTION RESULTING FROM HIS WORK.
5. THE CONTRACTOR SHALL PROVIDE SAFE ACCESS TO AND FROM ALL DRIVEWAYS AND STREETS, PAVED OR UNPAVED, AT ALL TIMES DURING CONSTRUCTION.
6. THE CONTRACTOR SHALL VERIFY AND CHECK ALL DIMENSIONS, LOCATIONS, ELEVATIONS AND DETAILS SHOWN ON THESE DRAWINGS PRIOR TO START OF CONSTRUCTION. ANY UNCERTAINTIES AND DISCREPANCIES SHALL BE IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER FOR CLARIFICATION PRIOR TO COMMENCING THAT WORK FEATURE..
7. THE PROJECT SHALL BE SECURED AT ALL TIMES DURING CONSTRUCTION.
8. THE CONTRACTOR SHALL DISPOSE OF ALL CONSTRUCTION DEBRIS AND OTHER WASTE MATERIAL OFF THE GOVERNMENT OWNED LAND AT AN APPROVED OFF-SITE DISPOSAL AREA IN ACCORDANCE WITH APPLICABLE REGULATORY AGENCY REQUIREMENTS. ALL PERMITS REQUIRED FOR OFF-SITE DISPOSAL SHALL BE OBTAINED BY THE CONTRACTOR.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLIANCE WITH AND THE ENFORCEMENT OF ALL APPLICABLE SAFETY REGULATIONS. ACCORDING TO EM 385-1-1 SAFETY AND HEALTH REQUIREMENTS MANUAL.
10. IN CASE OF DISCREPANCY BETWEEN THE SPECIFICATIONS AND CONSTRUCTION DOCUMENTS, THE MORE STRINGENT SHALL APPLY.
11. DURING CONSTRUCTION, STRUCTURE MAY BE BUOYANT. IN THE EVENT OF FAILURE OF DEWATERING SYSTEM AND THE EXCAVATION BECOMES FLOODED OR THE SURROUNDING GROUND BECOMES SATURATED. THE CONTRACTOR SHALL SUBMIT A PLAN TO PREVENT FLOATING OF THE STRUCTURE.
12. ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE USACE, DHS AND USIBWC.
13. THE CONTRACTOR SHALL PRESERVE AND PROTECT OR REMOVE (WITH PRIOR WRITTEN APPROVAL OF AFFECTED PROPERTY OWNER'S) ALL TREES, SHRUBS, HEDGES, RETAINING WALLS. LANDSCAPING, BUILDINGS, WALKS,ETC..., IN OR NEAR CONSTRUCTION AREA. CONTRACTORS SHALL TRIM AND / OR CUT AS NECESSARY ANY TREE OR BRANCH WITHIN OR EXTENDING INTO THE ENFORCEMENT ZONE IN ORDER TO PROVIDE A CLEAR ZONE.
14. INTERMITTENT SURVEY MONUMENTS MAY BE UNCOVERED DURING FENCE REMOVAL THAT ARE NOT SHOWN ON THE PLANS. THESE MONUMENTS SHALL BE PROTECTED IN PLACE. REALIGN FENCE AROUND MONUMENT TO CLEAR CONCRETE MONUMENT FOOTING (3 FEET OFFSET NOT REQUIRED).
15. THE CONTRACTOR SHALL NOT HAVE CONTACT WITH PRIVATE PROPERTY OWNERS WITHOUT SPECIFIC APPROVAL FROM USACE AND CBP. THE CONTRACTOR SHALL COORDINATE WITH PRIVATE LANDOWNERS TO MAINTAIN ACCESS TO PRIVATE PROPERTY DURING CONSTRUCTION. RIGHT OF ENTRY WILL BE PROVIDED AT CONTRACT AWARD.
16. CONTRACTOR MAXIMUM SPEED THROUGH THE CONSTRUCTION FOR BORDER PATROL MUST ALWAYS BE ALLOWED.
17. UNOBSTRUCTED ACCESS THROUGH THE CONSTRUCTION FOR BORDER PATROL MUST ALWAYS BE ALLOWED.
18. CONTRACTOR SHALL HIRE A PROFESSIONAL GEOTECHNICAL ENGINEER TO PROVIDE INSPECTION OF EXCAVATIONS AND SOIL/GROUNDWATER CONDITIONS THROUGHOUT CONSTRUCTION. THE GEOTECHNICAL ENGINEER IS RESPONSIBLE FOR PERFORMING PRE-CONSTRUCTION AND PERIODIC SITE VISITS THROUGHOUT CONSTRUCTION TO ASSESS THE SITE CONDITIONS. ALL COMMUNICATION WITH THE CONTRACTOR WILL BE COORDINATED WITH AND THROUGH THE CONTRACTING OFFICER OR COR TO CHANGE OR CLARIFY THE CONTRACT DOCUMENTS. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE 24-HOUR ADVANCE NOTICE TO THE COR AS WELL AS A WRITTEN SUMMARY REPORT TO COR, WITH REGARD TO ANY SITE VISIT THAT IS COMPLETED BY THE CONTRACTOR'S GEOTECHNICAL ENGINEER.
19. ALL UTILITIES LOCATIONS ARE APPROXIMATE AND TO BE VERIFIED BY THE CONTRACTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY AND LOCATE ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES PRIOR TO THE START OF DESIGN CONSTRUCTION.
20. CONTRACTOR SHALL MAINTAIN ALL BARBED WIRE FENCES STANDING AT ALL TIMES AND SHALL REPAIR OR REPLACE IF DAMAGED AT CONTRACTOR'S EXPENSE. CONTRACTOR SHALL CLOSE ALL OPEN AREAS WHERE FENCE IS REMOVED WITH BARBED WIRE TO PREVENT CATTLE CROSSING ON THE BORDER. CONTRACTOR SHALL GUARANTEE THAT NO CATTLE WILL CROSS INTO THE US DURING CONSTRUCTION.
21. ALL BORDER MONUMENTS SHALL BE PROTECTED IN PLACE.
22. DESIGN LOADS
    WIND LOAD:
    - BASIC WIND SPEED 116 MPH
    - EXPOSURE C

    EARTHQUAKE DESIGN DATA
    - SPECTRAL RESPONSE ACCELERATION. Ss 0.044
    - SPECTRAL RESPONSE ACCELERATION. S1 0.013
    - SITE CLASS D
    - SPECTRAL RESPONSE ACCELERATION. SDS 0.044
    - SPECTRAL RESPONSE COEFFICIENT. SD1 0.023
    - SEISMIC DESIGN CATEGORY. SD1 A
23. THE CONTRACTOR'S TRAFFIC CONTROL PLAN SHALL CONFORM TO THE MORE STRINGENT REQUIREMENT(S) OF TXDOT AND EM385-1-1 REQUIREMENTS.

## DEMOLITION AND STRUCTURAL STEEL REMOVAL:

1. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL ITEMS CALLED FOR IN THE PLANS AT AN APPROVED OFF-SITE LOCATION.
2. SEE SECTION 02 41 00 DEMOLITION FOR ADDITIONAL INFORMATION.
3. AT SEVERAL LOCATIONS, ITEMS, SUCH AS BUT NOT LIMITED TO TRAFFIC SIGNS AND MEMORIAL ITEMS, ARE ATTACHED TO THE EXISTING FENCING. IF SUCH ITEMS ARE NOT REMOVED BY LOCAL AUTHORITIES PRIOR TO FENCE DEMOLITION CONTRACTOR SHALL REMOVE SUCH ITEMS AND TURN THEM OVER TO THE COR.
4. AT ALL WASHES, WASH NUMBER SIGNS THAT ARE WELDED TO EXISTING FENCING SHALL BE REMOVED AND TURNED OVER TO COR TO GIVE BORDER PATROL. CONTRACTOR SHALL COORDINATE THROUGH COR WITH BORDER PATROL TO PLACE BACK ONTO NEW FENCE.

## CLEARING AND GRUBBING:

1. PRIOR TO GENERAL SITE GRADING, AREAS TO RECEIVE NEW STRUCTURES SHALL BE STRIPPED OF ANY EXISTING STRUCTURES AND VEGETATION.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR TRIMMING AND REMOVAL OF TREE OBSTRUCTING FENCE REPLACEMENT. FOR TREES ROOTED IN MEXICO THAT REQUIRE TRIMMING, CONTRACTOR SHALL COORDINATE WITH THE COR PRIOR TO CONDUCTING WORK.
3. WASTE MATERIALS INCLUDING VEGETATION, ROOTS, CONCRETE, SLURRY AND DEBRIS SHALL BE DISPOSED OF OFF-SITE BY CONTRACTOR.

## EXISTING UTILITIES:

1. LOCATIONS OF UNDERGROUND UTILITIES ARE FROM BEST INFORMATION AVAILABLE AT THE TIME THESE PLANS WERE PREPARED. THE GOVERNMENT DOES NOT WARRANT THE ACCURACY OF THE INFORMATION AVAILABLE AT THE TIME THESE PLANS WERE PREPARED. THE GOVERNMENT DOES NOT WARRANT THE ACCURACY OF THE INFORMATION PROVIDED. ANY DEVIATION SHALL BE CALLED TO THE ATTENTION OF THE COR PRIOR TO PROCEEDING WITH WORK IN THE AREA OF FOUND UTILITIES.
2. APPROXIMATE LOCATIONS OF KNOWN EXISTING UTILITIES ARE SHOWN. CONTRACTOR SHALL DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATIONS IN THE FIELD PRIOR TO COMMENCING WORK. CONTRACTOR TO BE FULLY RESPONSIBLE FOR DAMAGES WHICH MIGHT OCCUR BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE EXISTING UTILITIES AND /OR STRUCTURES.
3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO HAVE ALL UTILITIES LOCATED AND MARKED PRIOR TO THE START OF CONSTRUCTION. ANY FOUND UTILITIES NOT STATED ABOVE SHALL BE BROUGHT TO THE ATTENTION OF THE COR FOR DIRECTION. PRIOR TO PROCEEDING WITH CONSTRUCTION IN THE AREA OF SAID UTILITIES.
4. PUBLIC AND PRIVATE UTILITY LINES AND CUSTOMER SERVICE LINES MAY EXIST THAT ARE NOT SHOWN ON THE CONSTRUCTION DRAWINGS. IT SHALL BE CONTRACTOR'S RESPONSIBILITY TO LOCATE, MAINTAIN AND PROTECT THE INTEGRITY OF THESE LINES. HAND EXCAVATION MAY BE REQUIRED.
5. CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANY TO RELOCATE OR DIVERT ANY UTILITY IN CONFLICT WITH PROPOSED CONSTRUCTION SO AS NOT TO DISRUPT SERVICE OF IT. CONTRACTOR SHALL RESTORE, RELOCATED OR DIVERT UTILITY TO ITS ORIGINAL CONDITION AND LOCATION WHEN APPLICABLE UPON COMPLETION OF CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ALL UTILITY ADJUSTMENTS AND ACQUIRE ALL REQUIRED PERMITS FOR RELOCATION.
6. THE VERIFIED LOCATIONS OF ALL UTILITIES SHALL BE DEPICTED ON THE WORKING RECORD DRAWINGS AND FINAL AS-BUILT DRAWINGS.
7. CONTACT THE CITY OF RIOGRANDE CITY ,CYNTHIA ESCAMILLA, PUBLIC UTILITY OPERATIONS MANAGER, (956) 487-0672 FOR UTILITY LOCATES WITHIN THE LIMITS OF CONSTRUCTION.

## DRAINAGE:

6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE DRAINAGE AT ALL TIMES DURING CONSTRUCTION OF PROPOSED FACILITIES.
7. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES DURING THE INSTALLATION OF THE STRUCTURES AND DRAINAGE IMPROVEMENTS.

## SWPPP:

1. IMPLEMENT SWPPP AS REQUIRED BY TCEQ REQUIREMENTS AND PROJECT SPECIFICATIONS PRIOR TO CONSTRUCTION IMPLEMENT BEST MANAGEMENT PRACTICES (BMPS) DESCRIBED IN THE SWPPP TO REDUCE EROSION. SEE SECTION 01 57 19 ENVIRONMENTAL CONTROLS.
2. THE CONTRACTOR SHALL ENSURE THAT BMPS ARE IN PLACE PRIOR TO AND DURING CONSTRUCTION OF THE FENCE. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT EROSION AND SEDIMENT CONTROL MEASURES COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS.
3. THE CONTRACTOR SHALL PROVIDE ONE SWPPP REPORT AND PLANS FOR CONSTRUCTION OF THE BASE BID AND OPTION ITEMS. PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN A NOTICE OF INTENT AND COMPLETE THE NOTICE OF ENDING UPON COMPLETION.
4. THE COR RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO MODIFY OR REVISE THE SWPPP TO ENSURE THAT ALL CURRENT MEASURES TO PREVENT OFF-SITE MIGRATION OF POLLUTANTS, INCLUDING SOILS, ARE INCLUDED IN THE SWPPP. IF SWPPP DOES NOT ADEQUATELY ADDRESS APPLICABLE BMPS OR IF THE CONTRACTING OFFICER DETERMINES THAT THE STORM WATER POLLUTION PREVENTION REQUIREMENTS ARE NOT BEING MET.

## TUNNELS:

1. IN THE EVENT THAT AN UNDERGROUND TUNNEL OR VOID IS DISCOVERED DURING EXCAVATION, THE DESIGN - BUILD CONTRACTOR SHALL IMMEDIATELY CONTACT THE COR AND BORDER PATROL. THE DESIGN - BUILD CONTRACTOR SHALL INCLUDE THE LOCATION(S ) AND DIMENSIONS OF ANY TUNNELS DISCOVERED ON BOTH THE WORKING RECORD DRAWINGS AND FINAL AS-BUILT DRAWINGS.
2. THE LOCATIONS OF ALL TUNNELS DISCOVERED SHALL BE DEPICTED ON THE WORKING RECORD DRAWINGS AND FINAL AS-BUILT DRAWINGS.

## SEDIMENT CONTROL:

1. CONTRACTOR SHALL PROVIDE AND MAINTAIN SEDIMENT CONTROL SERVICES IN ACCORDANCE WITH THE CONTRACT DOCUMENT THROUGH THE TERM OF THE WORK COVERED BY HIS CONTRACT. SEE SECTION 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS.

## ON-SITE FILL:

1. SOIL EXCAVATED FROM THE PROJECT SITE SHALL BE CONSIDERED ON -SITE FILL.
2. ON-SITE FILL REQUIRED TO BRING THE SITE TO GRADE SHALL BE FREE OF VEGETATION AND DEBRIS, AND CONTAIN NO ROCKS OR LUMPS LARGER THAN 3 INCH NOMINAL DIAMETER.
3. EXCAVATED ON-SITE SOILS MEETINGS THE REQUIREMENTS FOR ENGINEERED FILL MAY BE REUSED AS ENGINEERED FILL.
4. EXCAVATED ON-SITE SOILS NOT MEETING THE REQUIREMENTS FOR ENGINEERED FILL MAY BE REUSED FOR FILL WITHIN THE ENFORCEMENT ZONE TO ADJUST GRADE PROVIDED IT DOES NOT CONTAIN ROOTS, ORGANICS, TRASH, DELETERIOUS, UNSUITABLE OR UNSATISFACTORY MATERIAL AS DEFINED BY USIBWC LEVEE CONSTRUCTION GUIDELINES, AND SECTION 31 00 00 EARTHWORK PLAN SPECIFICATIONS, INCLUDING COHESIONLESS MATERIAL (SP SW SM GC GM GP GW)
5. EXCAVATED ON-SITE SOILS NOT MEETING THE REQUIREMENTS FOR ENGINEERED FILL MAY BE MODIFIED / CONDITIONED EITHER THROUGH LIME STABILIZATION OR BLENDING TO MEET THE REQUIREMENTS FOR ENGINEERED FILL AND USED WITHIN THE PROJECT SITE PROVIDED IT DOES NOT CONTAIN ROOTS, ORGANICS, DELETERIOUS OR UNSATISFACTORY MATERIALS AS DEFINED BY USIBWC LEVEE CONSTRUCTION GUIDELINES AND SECTION 31 00 00 EARTHWORK PLAN SPECIFICATIONS. ITS IS ESTIMATED 4% HYDRATED LIME WILL BE REQUIRED TO RAISE THE PH AND CONDITION ON-SITE-HIGH PLASTICITY CLAYS. TESTING WILL BE REQUIRED DURING CONSTRUCTION TO VALIDATE THE ESTIMATE. THE CONTRACTOR SHOULD BE AWARE THAT SOIL PROPERTIES VARY WITHIN THE PROJECT SITE, AND THE QUANTITY OF LIME ESTIMATED TO CONDITION THE ON-SITE SOILS MAY CHANGE.
6. EXISTING CALICHES /AGGREGATE SURFACE COURSE EXCAVATED FROM THE EXISTING ROAD MAY NOT BE REUSED AS AGGREGATE SURFACE COURSE FOR THE NEW PATROL ROAD OR CREST ROAD. EXISTING CALICHE/AGGREGATE SURFACE COURSE MAY BE REUSED AS FILL WITHIN THE ENFORCEMENT ZONE,OR USED AS SUBBASE MATERIAL WITHIN THE PATROL ROAD TO REDUCE THE AGGREGATE SURFACE MATERIAL WITHIN THE PATROL ROAD TO REDUCE THE AGGREGATE SURFACE COURSE REQUIREMENTS. SEE ALL WEATHER ROAD (SEE CIVIL NARRITIVE), PROVIDED IT DOES NOT CONTAIN ROOTS, ORGANICS, DELETERIOUS OR UNSATISFACTORY MATERIAL AS DEFINED BY USIBWC LEVEE CONSTRUCTION GUIDELINES, AND SECTION 31 00 00 EARTHWORK PLAN SPECIFICATIONS.
7. NO ON-SITE FILL SHALL BE PLACED ON OR AGAINST CONCRETE LESS THAN 7 DAYS AFTER PLACEMENT OR 70 PERCENT OF THE DESIGN STRENGTH WITHOUT PRIOR APPROVAL OF THE CONTRACTING OFFICER. CRAWLER-TYPE TRACTORS,VIBRATORY EQUIPMENT AND OTHER SIMILAR COMPACTION EQUIPMENT SHALL NOT BE USED WITHIN 4 FEET OF ANY COMPLETED OR PARTIALLY COMPLETED STRUCTURE. COMPACTION WITHIN 4 FEET OF COMPLETED OR PARTIALLY COMPLETED STRUCTURES SHALL BE ACCOMPLISHED BY THE USE OF MECHANICAL HAND TAMPERS, VIBRATING PLATES, OR OTHER APPROVED METHODS AND EQUIPMENT. FILL MATERIAL SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY WITHIN ±3% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D 698. CONTRACTOR WILL ENSURE THAT COMPACTION OPERATIONS DO NOT DAMAGE ANY EXISTING UTILITIES OR STRUCTURE. ANY DAMAGE CAUSED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE..
8. FILL PLACED ON ENGINEERED FILL OR NATURAL SLOPES STEEPER THAN 5H:1V SHALL BE KEYED AND BENCHED INTO EXISTING SLOPE. THE BENCHES SHALL BE WIDE ENOUGH TO ACCOMMODATE THE COMPACTION EQUIPMENT AND THE LOWEST BENCH SHALL BE THE WIDEST AT A MINIMUM OF 8 TO 10 FEET WIDE. BENCH HEIGHTS SHALL BE A MAXIMUM OF 3 FEET. BENCH WIDTHS AT THE TOP SHALL BE A MINIMUM OF 4 FEET.

## EGRESS/INGRESS ROAD AND STAGING AREAS:

1. THE CONTRACTOR MAY USE THE PUBLIC ROADS SHOWN ON THE LOCATION MAP IN THE PLANS FOR INGRESS / EGRESS TO THE PROJECT SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE AT THESE LOCATIONS DUE TO CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROCURING AND MAINTAINING THE STAGING AREA.
3. SAFE ACCESS THROUGH WORK SITE SHALL BE MAINTAINED AT ALL TIMES. MATERIAL AND EQUIPMENT SHALL NOT BE STAGED SUCH AS TO LIMIT ACCESS THROUGH THE CONSTRUCTION SITE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROCURING AND MAINTAINING THE STOCKPILE AREA. STOCKPILE AREA WILL BE LOCKED OUTSIDE THE FLOOD PLAIN.
5. THE CONTRACTOR SHALL NOT HAVE CONTACT WITH PRIVATE PROPERTY OWNERS FOR EGRESS/INGRESS ACCESS WITHOUT SPECIFIC APPROVAL FROM USACE AND CBP.

## EXCAVATION:

1. ALL EXCAVATED MATERIAL IS TO BE REMOVED FROM THE PROJECT PERMANENT EASEMENTS AND STAGING AREAS AND DISPOSES OF AT AN APPROVED DISPOSAL LOCATION. UNLESS OTHERWISE NOTED OR APPROVED FOR USE AS BACK FILL MATERIAL. EXCAVATED MATERIAL SHALL NOT BE STORED IN THE RIVER FLOOD PLAIN.
2. TRUCKS SHALL BE LOADED IN A MANNER SO AS TO AVOID LOSS OF LOADED MATERIAL OR ANY PORTION THEREOF DURING TRANSPORT IN ACCORDANCE WITH STATE LAW.
3. THE CONTRACTOR SHALL, AT HIS/HER OWN EXPENSE, REPAIR ANY HAUL ROAD SURFACE IRREGULARITIES CAUSES BY LOADING OR HAULING OPERATIONS.
4. ALL TEMPORARY EXCAVATIONS MUST COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL SAFETY REGULATION.

## PREPARED SUBGRADE:

1. DUE TO THE VARIABILITY OF SITE SOILS, ISOLATED AREAS OF THE SUBGRADE MAY REQUIRE OVER-EXCAVATION AND RECOMPACTION TO MITIGATE LOOSE OR DISTURBED SOIL CONDITIONS. SUBGRADE FOR THE ENTIRE BORDER ROAD SHALL BE PROOF ROLLED IN ACCORDANCE WITH SECTION 31 00 00 EARTHWORK, SUBSECTION 3.12.1 PROOF ROLLING. ANY AREAS OBSERVED TO DEFLECT UNDER THE PRESSURE EXERTED BY THE PROOF ROLLING OPERATIONS WILL REQUIRE OVER-EXCAVATION AND REPLACEMENT WITH ENGINEERED FILL.
2. FOR CUT AREAS, CUT PROPOSED ROAD TO GRADE, SCARIFY TOP 8 INCHES OF SUBGRADE AND MOISTURE CONDITION. FOR FILL AREAS, SCARIFY TOP 6 INCHES OF EXISTING GRADE AND MOISTURE AND CONDITION.
3. COMPACT SUBGRADE FOR CUTTING AREAS TO 95% OF ASTM D1557 AT ±2% OF OPTIMUM MOISTURE CONTENT. FILL MATERIAL SHALL BE TESTED IN 8-INCH LOOSE/ COMPACTED TO 6 INCHES UNDER ROADWAYS AND 12-INCH LOOSE/COMPACTED TO 8-INCHES IN OTHER FILL LOCATIONS AND SHALL CARRY SIMILAR SOIL PROPERTIES AS SHOWN ON BORING LOGS. COMPACTION OF FILL MATERIAL IN SUBGRADE SHALL BE TO 95% OF ASTM D1557 AT ±2% OF OPTIMUM MOISTURE CONTENT.
4. SITE GRADING PERFORMED DURING OR SUBSEQUENT TO WET WEATHER MAY RESULT IN NEAR-SURFACE SITE SOILS WITH MOISTURE CONTENTS SIGNIFICANTLY ABOVE OPTIMUM. THIS CONDITION COULD HAMPER EQUIPMENT MANEUVERABILITY AND EFFORTS TO COMPACT SITE SOILS TO THE RECOMMENDED COMPACTION CRITERIA. DURING MOST OF THE YEAR, THE SITE WILL TYPICALLY DRY TO WORKABLE MOISTURE CONTENTS WITHIN 1 TO 2 DAYS. IF TIME IS CRITICAL FACTOR. DISKING FOR AERATION, CHEMICAL TREATMENT, REPLACEMENT WITH DRIER MATERIAL, STABILIZATION WITH GEOTEXTILE FABRIC OR OTHER METHODS MAY BE IMPLEMENTED TO REDUCE EXCESSIVE SOIL MOISTURE AND FACILITATE EARTHWORK OPERATIONS. THIS WILL BE DONE AT NO ADDITIONAL COST TO THE GOVERNMENT. ALL COMMUNICATION WITH CONTRACTOR SHALL BE COORDINATED WITH AND THROUGH THE COR TO CHANGE OR CLARIFY THE CONTRACT DOCUMENTS. ANY FIELD DIRECTIVES WILL BE COORDINATED WITH AND ISSUED BY THE COR.

## FOUNDATIONS:

1. FOUNDATIONS SHALL BE CAST ON PROPERLY COMPACTED SOIL. NATIVE SOILS SHALL BE COMPACTED TO AT LEAST 95% TO THE MAXIMUM DRY DENSITY AT ±2% OF OPTIMUM MOISTURE (ASTM D1557).
2. WHERE NATIVE SOILS ARE LOOSE, SATURATED OR UNSTABLE AND DO NOT MEET THE ALLOWABLE BEARING CAPACITY, NATIVE SOILS SHALL BE OVER-EXCAVATED BELOW THE BOTTOM OF THE FOOTING ELEVATION TO SOIL ELEVATION MEETING THE DESIGN PARAMETERS. THE OVER-EXCAVATED AREAS SHALL BE BACK FILLED AND COMPACTED USING ENGINEERED FILL. SEE SECTION 31 00 00 EARTHWORK FOR ADDITIONAL INFORMATION. SOIL CONDITIONS WILL VARY AND HENCE COMPACTION MUST RELATE TO THE TYPE OF MATERIAL.
3. CONTRACTOR SHALL BE PREPARED TO SHORE AND FORM TRENCH FOOTING WHERE LOOSE SOILS ARE ENCOUNTERED.
4. FOUNDATION DETAILS FOR BOLLARDS NEED TO BE SUBMITTED (AFTER A GEOTECHNICAL STUDY IS COMPLETED). FOUNDATION DETAILS MAY VARY FROM ONE LOCATION TO ANOTHER DEPENDING UPON SOIL TYPE.
5. CONTRACTOR SHALL DEVELOP TRENCH DEWATERING PLANS WHERE NECESSARY PRIOR TO FOUNDATION PLACEMENT.

## CAST-IN PLACE CONCRETE:

1. ALL CONCRETE STRENGTH SHALL CONFORM TO SECTION 03 30 00 CAST-IN- PLACE CONCRETE. SEE SECTION 03 30 00 CAST-IN -PLACE CONCRETE FOR ADDITIONAL INFORMATION.
2. CONCRETE WORK TO BE COVERED IN ACCORDANCE WITH "THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" ACI 318.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS FOR SIZE AND LOCATION OF EMBEDDED ITEMS AND SLEEVES REQUIRED. THESE ITEMS SHALL BE FURNISHED AND INSTALLED PRIOR TO PLACEMENT OF CONCRETE.
4. ALL MIXING, HANDLING AND TRANSPORTING, PLACING AND CURING OF CONCRETE SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE AMERICAN CONCRETE INSTITUTE.
5. THE ONLY PERSONS AUTHORIZED TO ADD WATER TO THE CONCRETE TRUCK AT THE JOB SITE ARE THE QC TESTING REPRESENTATIVE. IF APPROVED, THE QC TESTING REPRESENTATIVE IS REQUIRED TO NOTIFY THE COR AND QA TESTING REPRESENTATIVE.
6. ALL EXPOSED EDGES SHALL BE CAST WITH ¾ INCH CHAMFERS UNO.

## REINFORCING STEEL:

1. REINFORCING STEEL SHALL CONFORM TO SECTION 03 20 00.00 10 CONCRETE REINFORCING. NO TACK WELDING OF REINFORCING SHALL BE PERMITTED. PLACEMENT AND DETAILING OF CONCRETE REINFORCEMENT AND ACCESSORIES SHALL BE IN ACCORDANCE WITH ACI 318 AND ACI SP-66, RESPECTIVELY (LATEST ADDITIONS).
2. REBAR SHALL HAVE A MINIMUM COVER OF 3 INCHES UNLESS OTHERWISE NOTED.
3. HORIZONTAL AND VERTICAL REINFORCING STEEL SHALL BE CONTINUOUS ACROSS CONSTRUCTION JOINTS.
4. CONSTRUCTION JOINTS NOT INDICATED ON THE DRAWINGS SHALL BE MADE AND LOCATED AS NOT TO IMPAIR SIGNIFICANTLY THE STRENGTH OF THE STRUCTURE. CONTRACTORS SHALL SUBMIT LOCATION OF PROPOSED JOINTS IN THE SLABS AND WALLS TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

## STRUCTURAL STEEL:

1. STRUCTURAL STEEL SHALL BE PROCURED BY THE CONTRACTOR IN ACCORDANCE WITH SECTION 05 12 00 STRUCTURAL STEEL.
2. STRUCTURAL STEEL SHALL CONFORM TO SECTION 05 12 00 STRUCTURAL STEEL. SEE SECTION 05 12 00 STRUCTURAL STEEL FOR ADDITIONAL INFORMATION.
3. WELDED CONNECTIONS FOR STRUCTURAL STEEL SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.4.
4. STRUCTURAL STEEL SHALL CONFORM TO THE AISC "SPECIFICATIONS FOR DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDING", LATEST EDITION.

US Army Corps of Engineers ®

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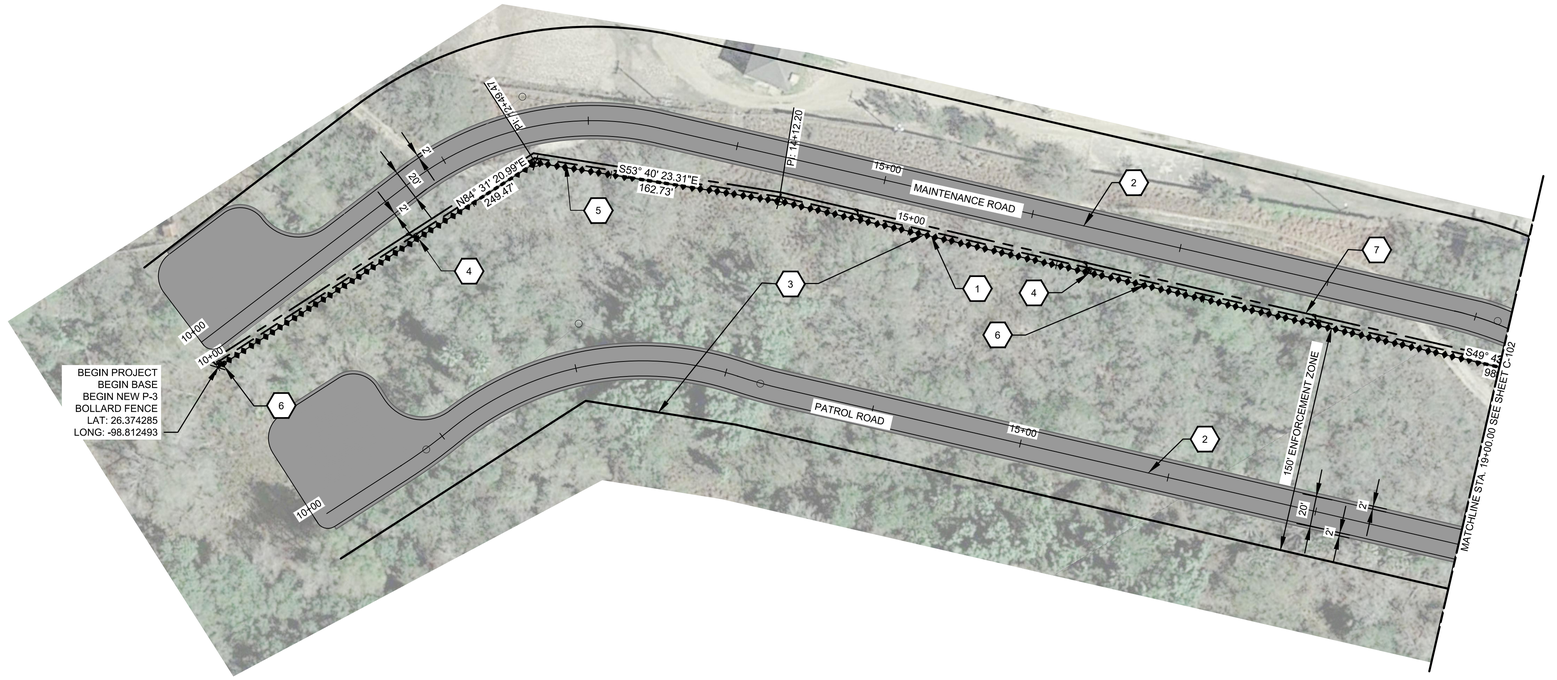
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

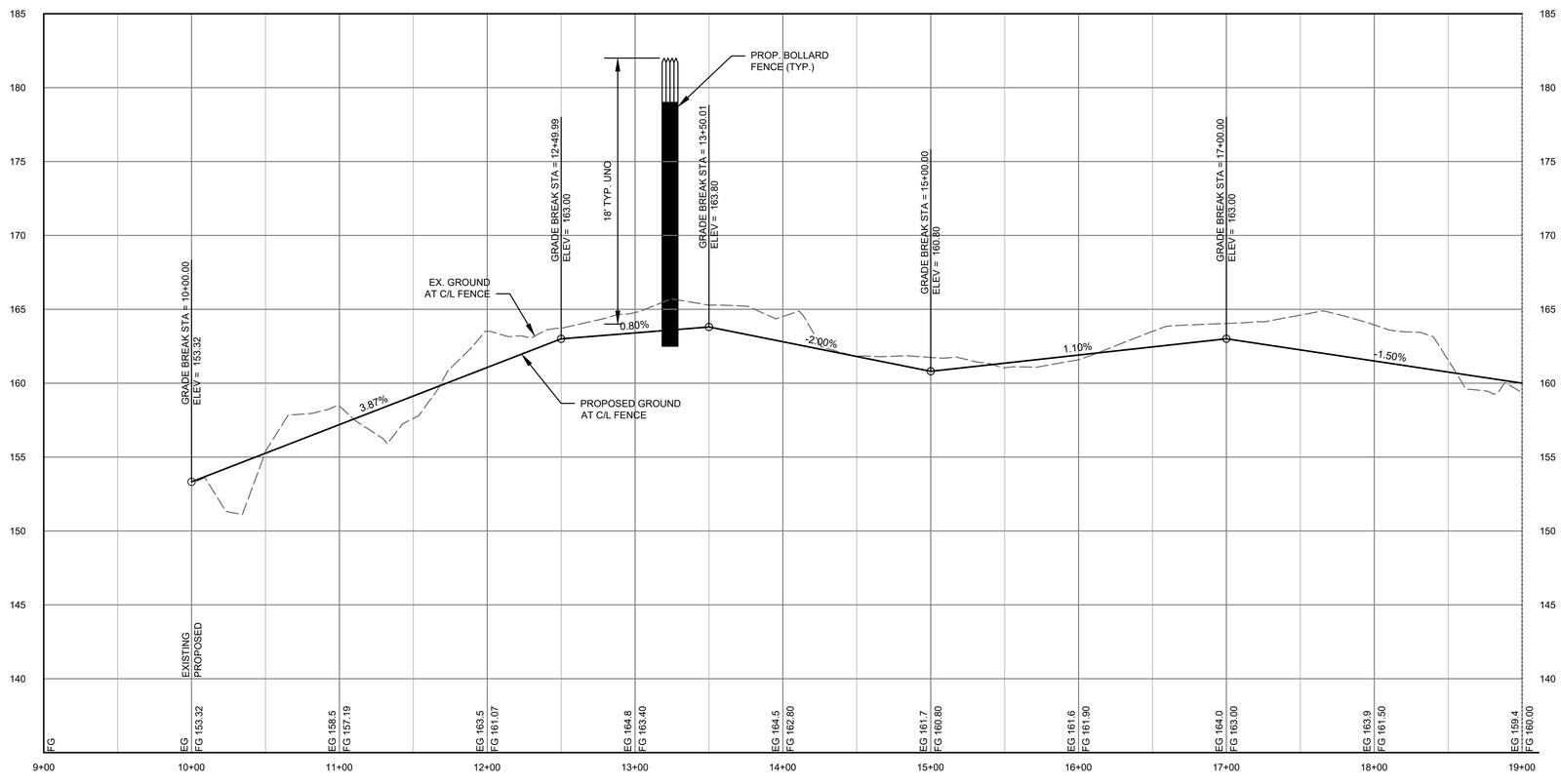
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

GENERAL NOTES

SHEET ID
RGC
G-003




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

0 50 100 1' = 50' - 0"
0 5 10 1' = 5' - 0"

## GENERAL NOTES

1. THIS SHEET IS AT 35% CONCEPT DESIGN AND NOT TO BE USED FOR CONSTRUCTION.
2. CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL GEOTECHNICAL TESTING, TOPOGRAPHIC MAPPING, DESIGN, SURVEY STAKE-OUT, ABOVE AND BELOW GROUND UTILITY IDENTIFICATIONS AND REQUIRED RELOCATIONS, AND REMOVAL AND PROPER DISPOSAL OF STRUCTURES, DEBRIS, ETC. LOCATED WITHIN THE ENFORCEMENT ZONE.
3. CONTRACTOR SHALL ENSURE THAT ALL DESIGNS MEET TACTICAL INFRASTRUCTURE STANDARDS, LATEST EDITION.
4. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES, IRRIGATION CULVERTS AND DRAINAGE STRUCTURES, AND ADJUST/RELOCATE AS REQUIRED TO DE-CONFLICT WITH THE PROPOSED BOLLARD WALL AND ENFORCEMENT ZONE (I.E.: EX. IRRIGATION VALVES TO BE RELOCATED TO NORTH LEVEE EMBANKMENT).
5. CONTRACTOR SHALL DESIGN AND INSTALL ALL DRAINAGE SYSTEMS FOR THIS PROJECT.
6. LIGHTING LOCATIONS ARE CONCEPTUAL. CONTRACTOR TO PROVIDE FINAL LIGHTING COMPUTATIONS AND LOCATIONS.

## KEYNOTES

1. PROPOSED NEW TYPE P-3 BOLLARD FENCE.
2. PROPOSED TYPE FC-2 AGGREGATE ALL-WEATHER ROAD.
3. CLEAR VEGETATION AND GRADE WITHIN ENFORCEMENT ZONE.
4. PROPOSED LIGHT POLE, PULLBOX, AND LIGHTING - SEE ELEC. FOR LOCATIONS (TYP).
5. PROPOSED POWER AND LIGHTING DISTRIBUTION CABLE AND CONDUIT/DUCTBANK.
6. PROPOSED FENCE GROUNDING LOCATIONS.
7. PROPOSED COMMUNICATION CONDUIT/ DUCTBANK. (CABLE FUTURE BY OTHERS)
8. GATE ELECTRICAL DISTRIBUTION EQUIPMENT.
9. GATE GROUNDING LOCATIONS.
10. PROPOSED MOTORIZED VEHICLE SLIDE GATE.
11. PROPOSED RVSS SITE.
12. CONCEPTUAL ELECTRICAL UTILITY CONNECTION POINT.
13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

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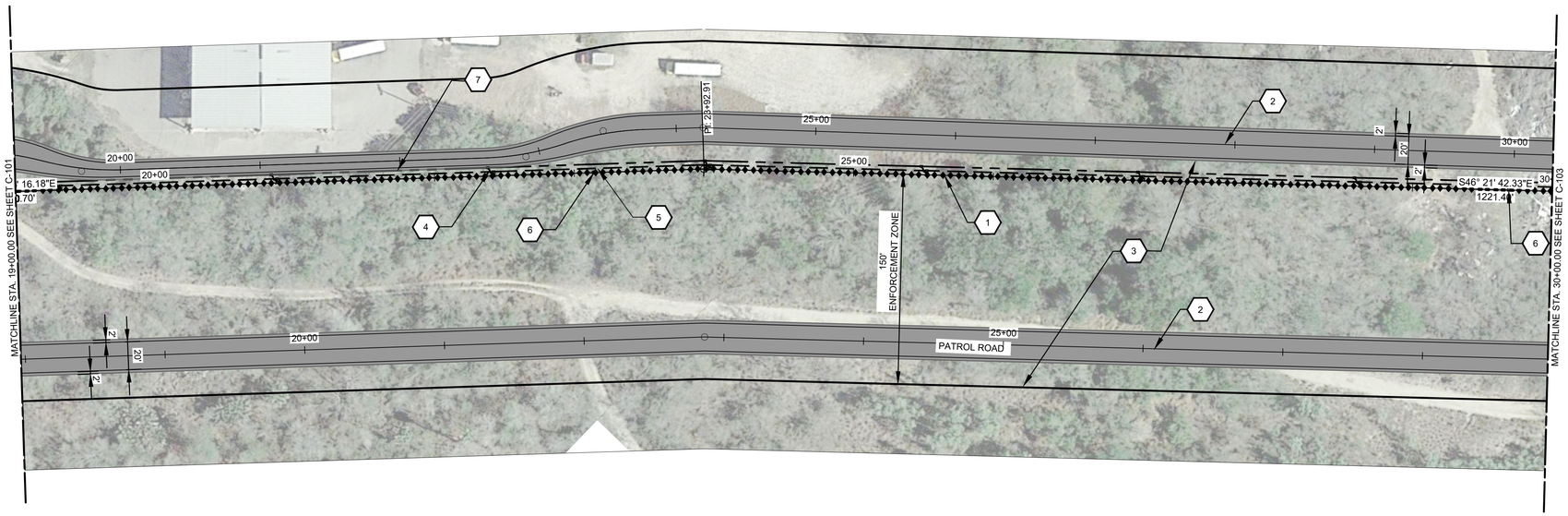


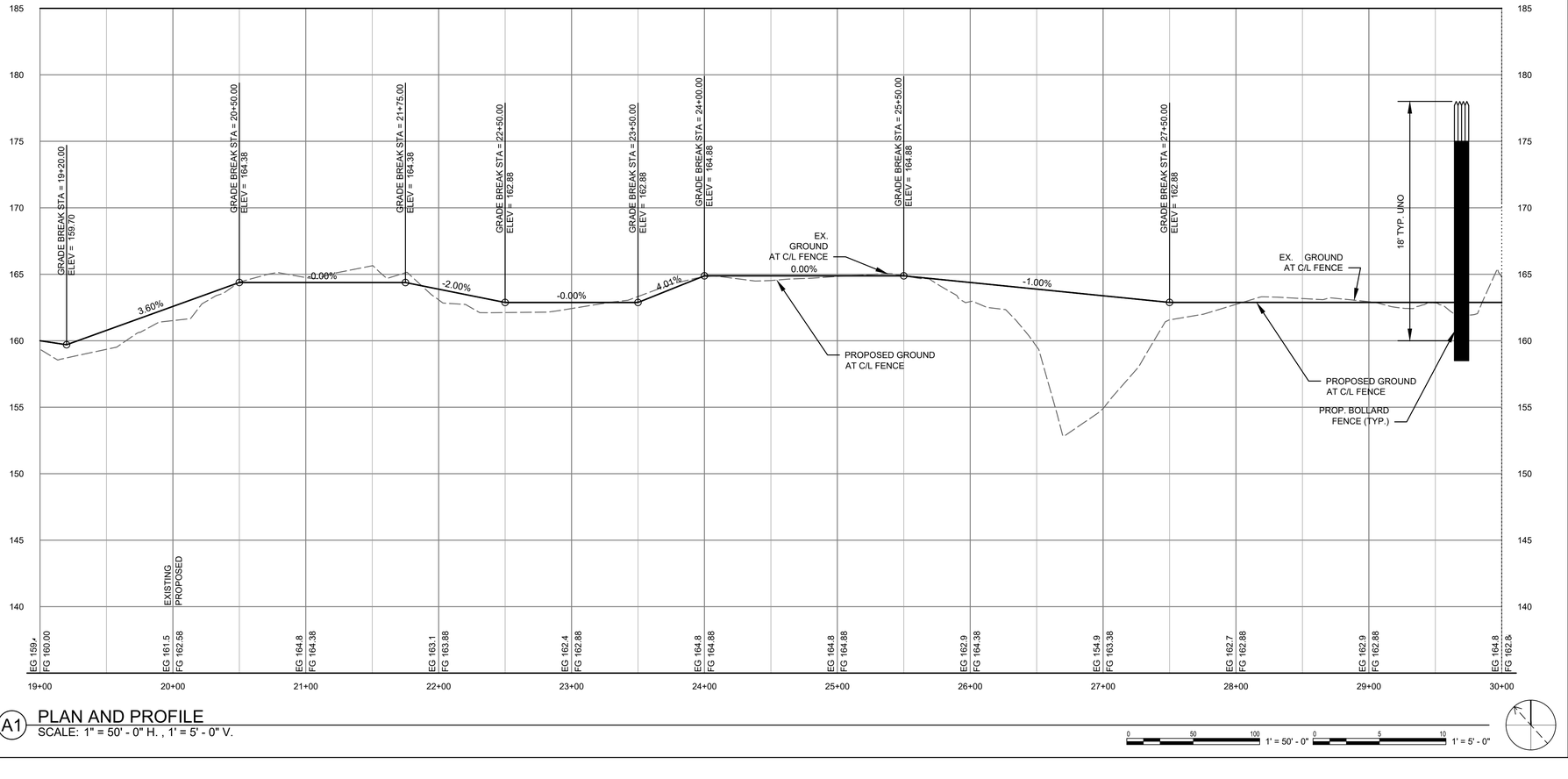


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3. CONTRACTOR SHALL ENSURE THAT ALL DESIGNS MEET TACTICAL INFRASTRUCTURE STANDARDS, LATEST EDITION.
4. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES, IRRIGATION CULVERTS AND DRAINAGE STRUCTURES, AND ADJUST/RELOCATE AS REQUIRED TO DE-CONFLICT WITH THE PROPOSED BOLLARD WALL AND ENFORCEMENT ZONE (I.E.: EX. IRRIGATION VALVES TO BE RELOCATED TO NORTH LEVEE EMBANKMENT).
5. CONTRACTOR SHALL DESIGN AND INSTALL ALL DRAINAGE SYSTEMS FOR THIS PROJECT.
6. LIGHTING LOCATIONS ARE CONCEPTUAL. CONTRACTOR TO PROVIDE FINAL LIGHTING COMPUTATIONS AND LOCATIONS.

## KEYNOTES

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5. PROPOSED POWER AND LIGHTING DISTRIBUTION CABLE AND CONDUIT/DUCTBANK.
6. PROPOSED FENCE GROUNDING LOCATIONS.
7. PROPOSED COMMUNICATION CONDUIT/ DUCTBANK. (CABLE FUTURE BY OTHERS)
8. GATE ELECTRICAL DISTRIBUTION EQUIPMENT.
9. GATE GROUNDING LOCATIONS.
10. PROPOSED MOTORIZED VEHICLE SLIDE GATE.
11. PROPOSED RVSS SITE.
12. CONCEPTUAL ELECTRICAL UTILITY CONNECTION POINT.
13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:

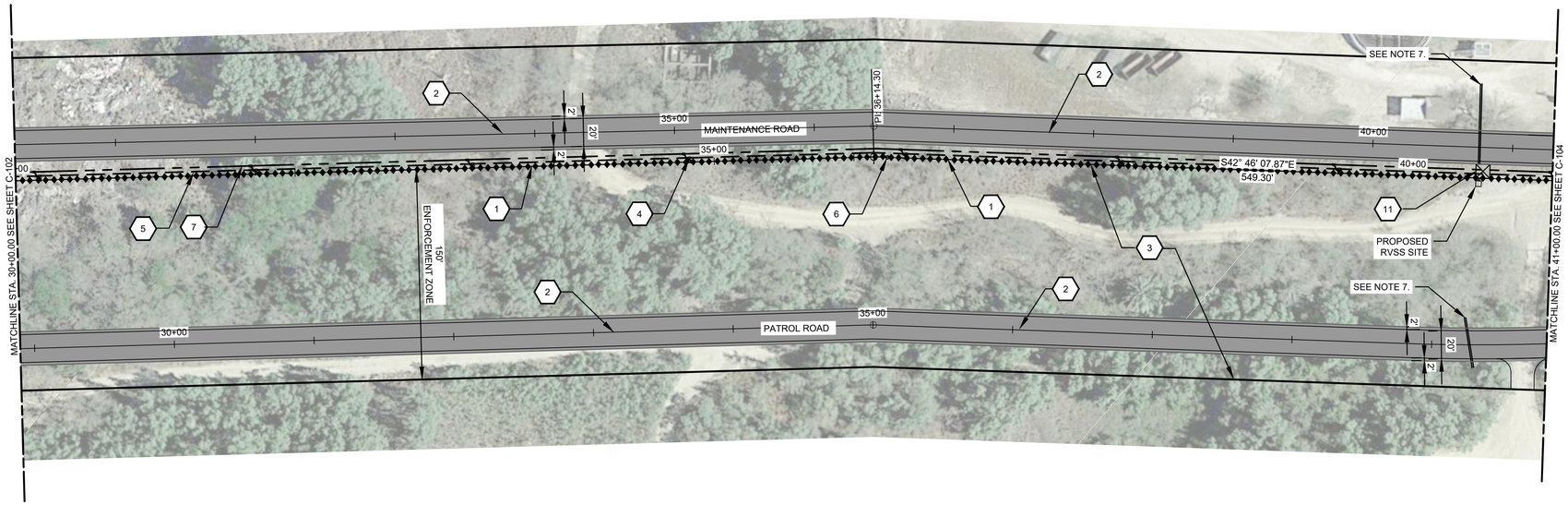
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

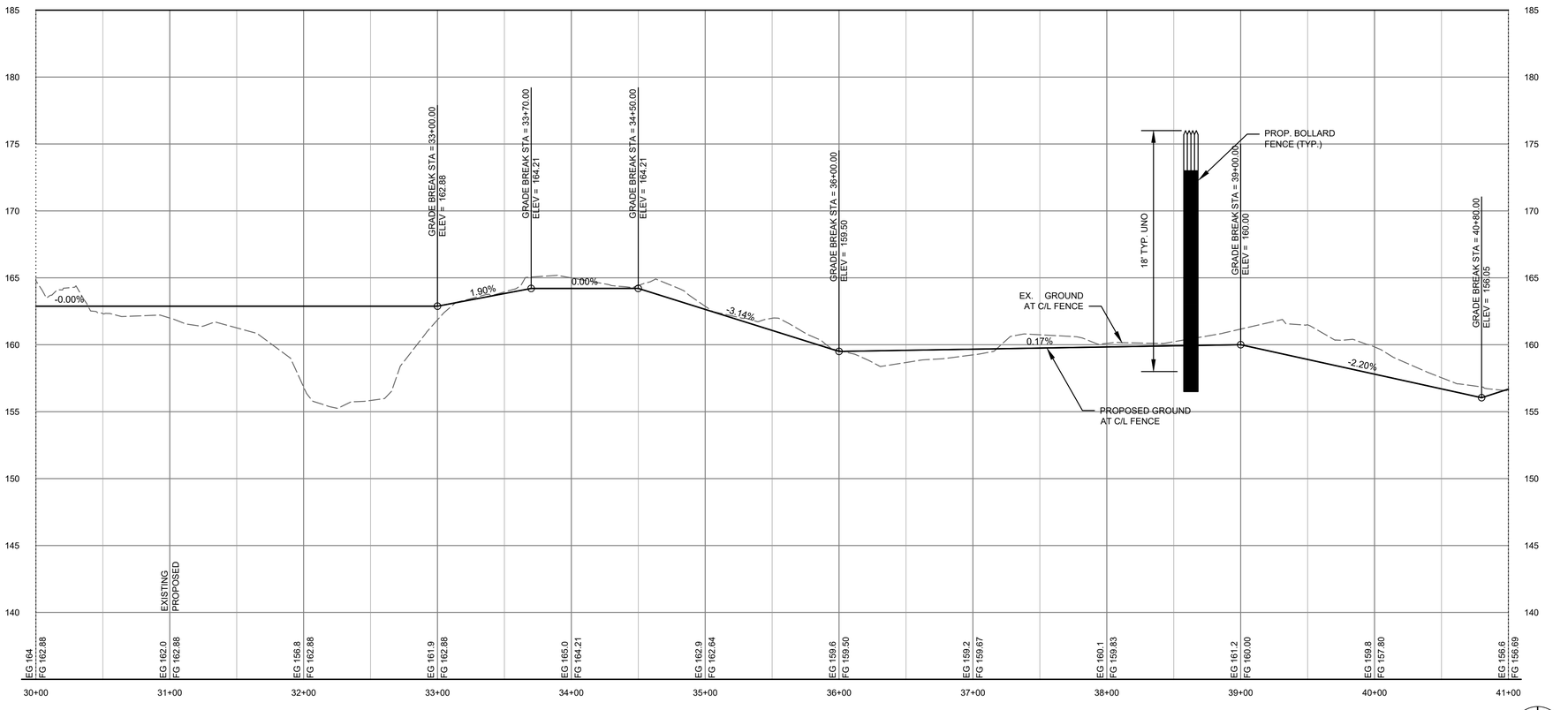
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 19+00.00 - 30+00.00

SHEET ID
RGC
C-102




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

0 50 100 1' = 50' - 0"  0 5 10 1' = 5' - 0"

## GENERAL NOTES

1. THIS SHEET IS AT 35% CONCEPT DESIGN AND NOT TO BE USED FOR CONSTRUCTION.
2. CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL GEOTECHNICAL TESTING, TOPOGRAPHIC MAPPING, DESIGN, SURVEY STAKE-OUT, ABOVE AND BELOW GROUND UTILITY IDENTIFICATIONS AND REQUIRED RELOCATIONS, AND REMOVAL AND PROPER DISPOSAL OF STRUCTURES, DEBRIS, ETC. LOCATED WITHIN THE ENFORCEMENT ZONE.
3. CONTRACTOR SHALL ENSURE THAT ALL DESIGNS MEET TACTICAL INFRASTRUCTURE STANDARDS, LATEST EDITION.
4. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES, IRRIGATION CULVERTS AND DRAINAGE STRUCTURES, AND ADJUST/RELOCATE AS REQUIRED TO DE-CONFLICT WITH THE PROPOSED BOLLARD WALL AND ENFORCEMENT ZONE (I.E.: EX. IRRIGATION VALVES TO BE RELOCATED TO NORTH LEVEE EMBANKMENT).
5. CONTRACTOR SHALL DESIGN AND INSTALL ALL DRAINAGE SYSTEMS FOR THIS PROJECT.
6. LIGHTING LOCATIONS ARE CONCEPTUAL. CONTRACTOR TO PROVIDE FINAL LIGHTING COMPUTATIONS AND LOCATIONS.
7. SEE SHEET E-502 FOR TYPICAL PLAN VIEW AT RVSS TOWER.

## KEYNOTES

1. PROPOSED NEW TYPE P-3 BOLLARD FENCE.
2. PROPOSED TYPE FC-2 AGGREGATE ALL-WEATHER ROAD.
3. CLEAR VEGETATION AND GRADE WITHIN ENFORCEMENT ZONE.
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**US Army Corps of Engineers ®**

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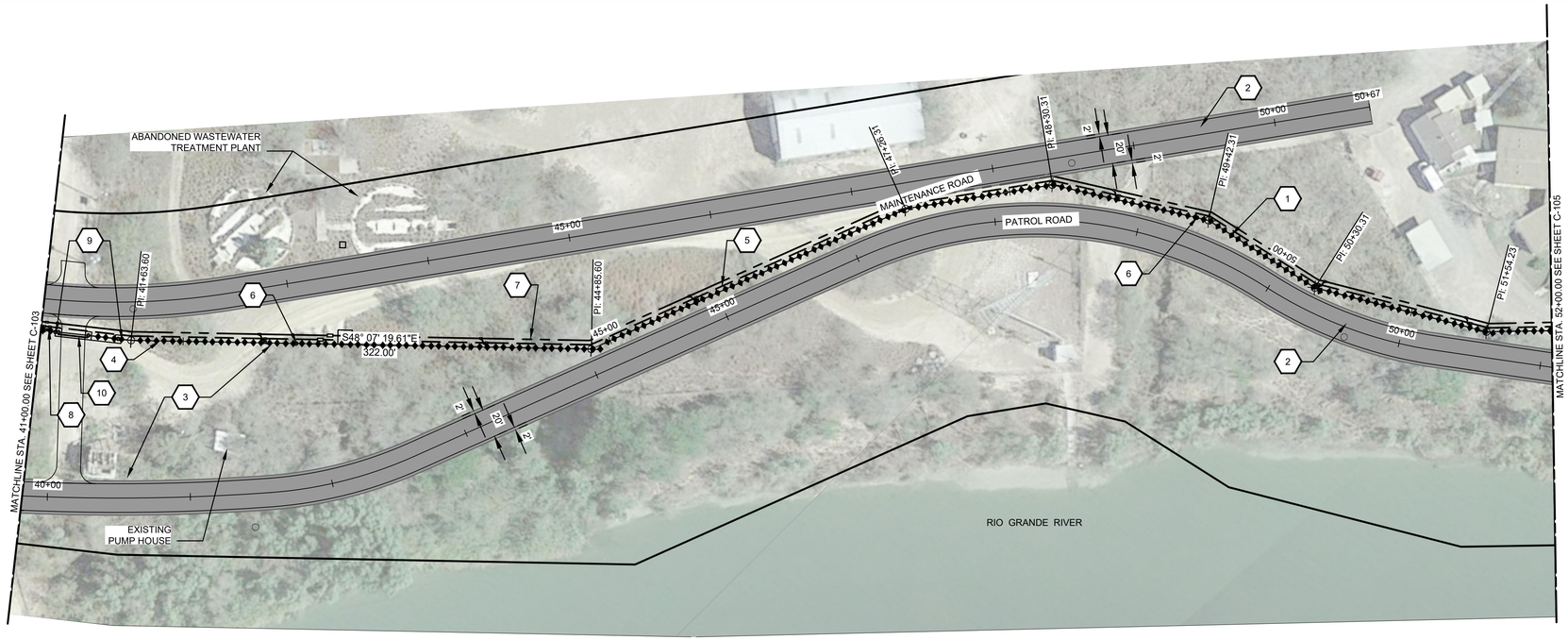
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

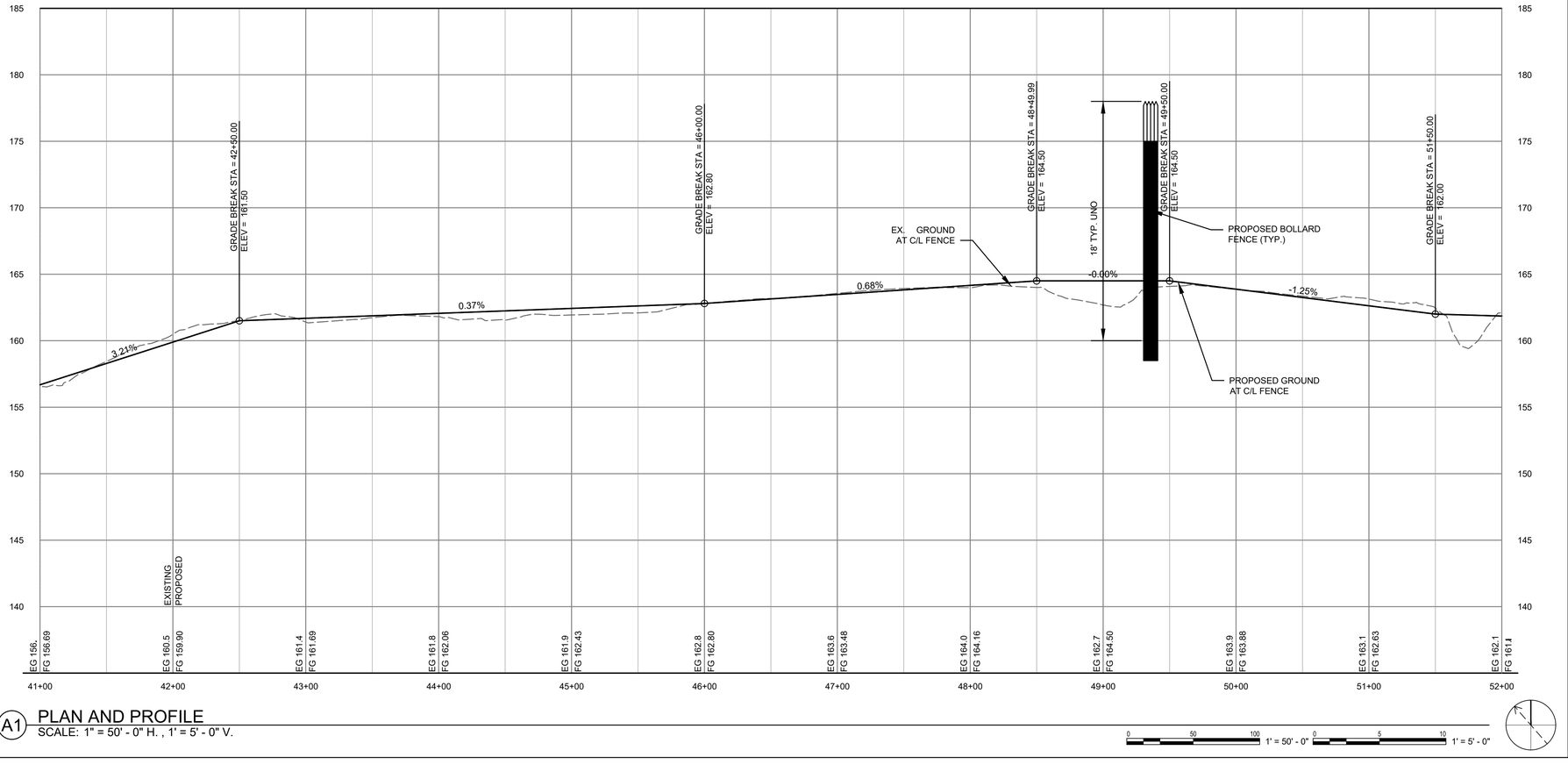
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 30+00.00 - 41+00.00

SHEET ID
RGC
C-103




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

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US Army Corps of Engineers ®

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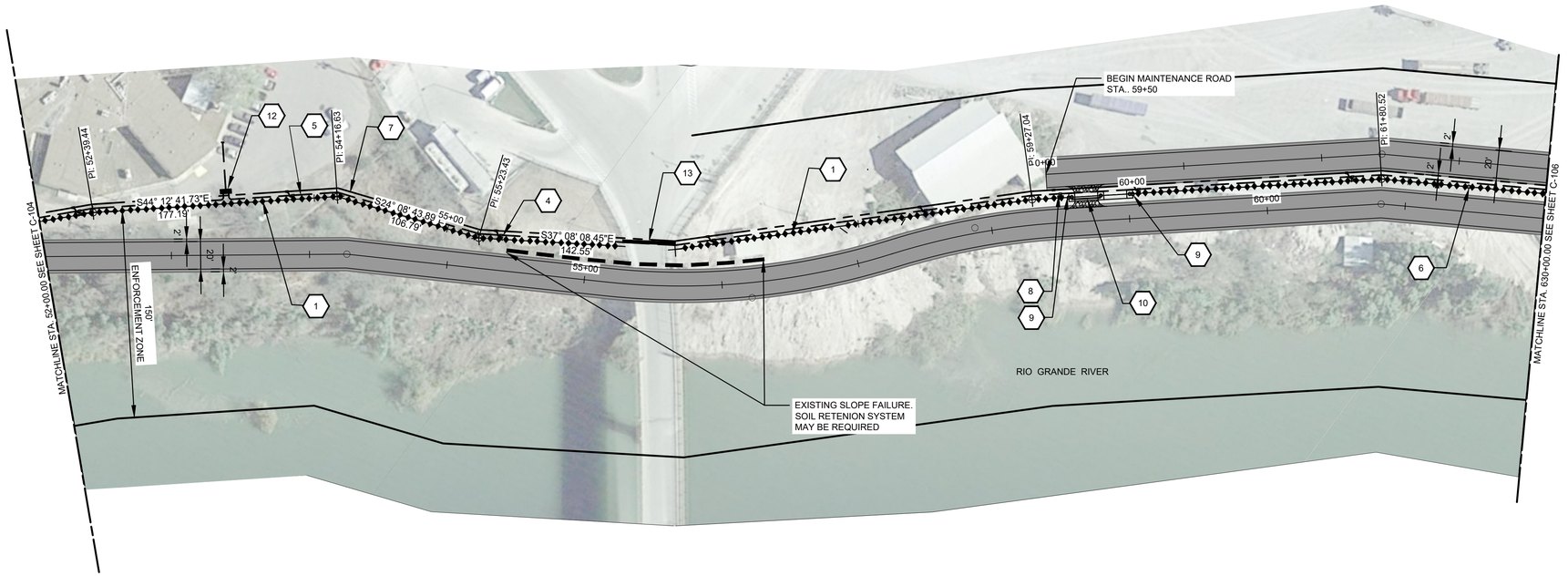
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

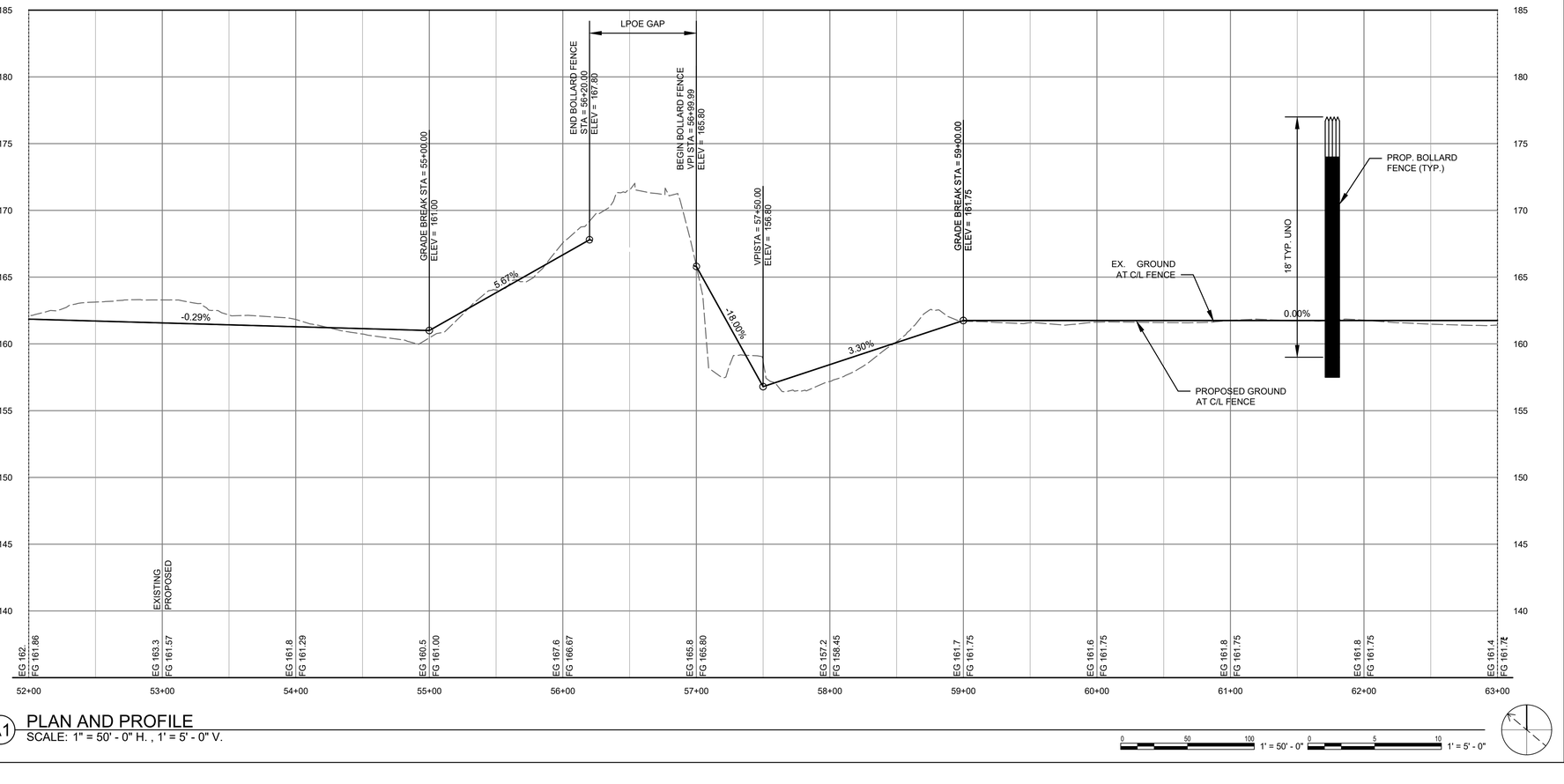
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 41+00.00 - 52+00.00

SHEET ID
RGC
C-104




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

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US Army Corps of Engineers ®

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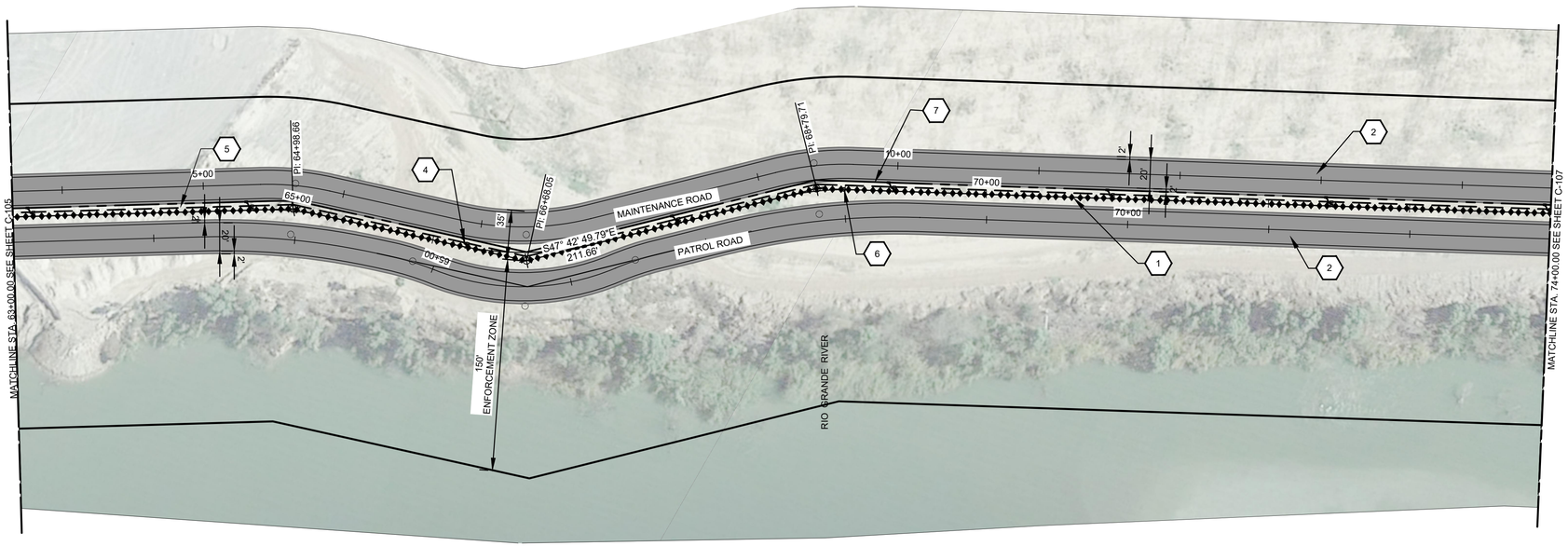
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

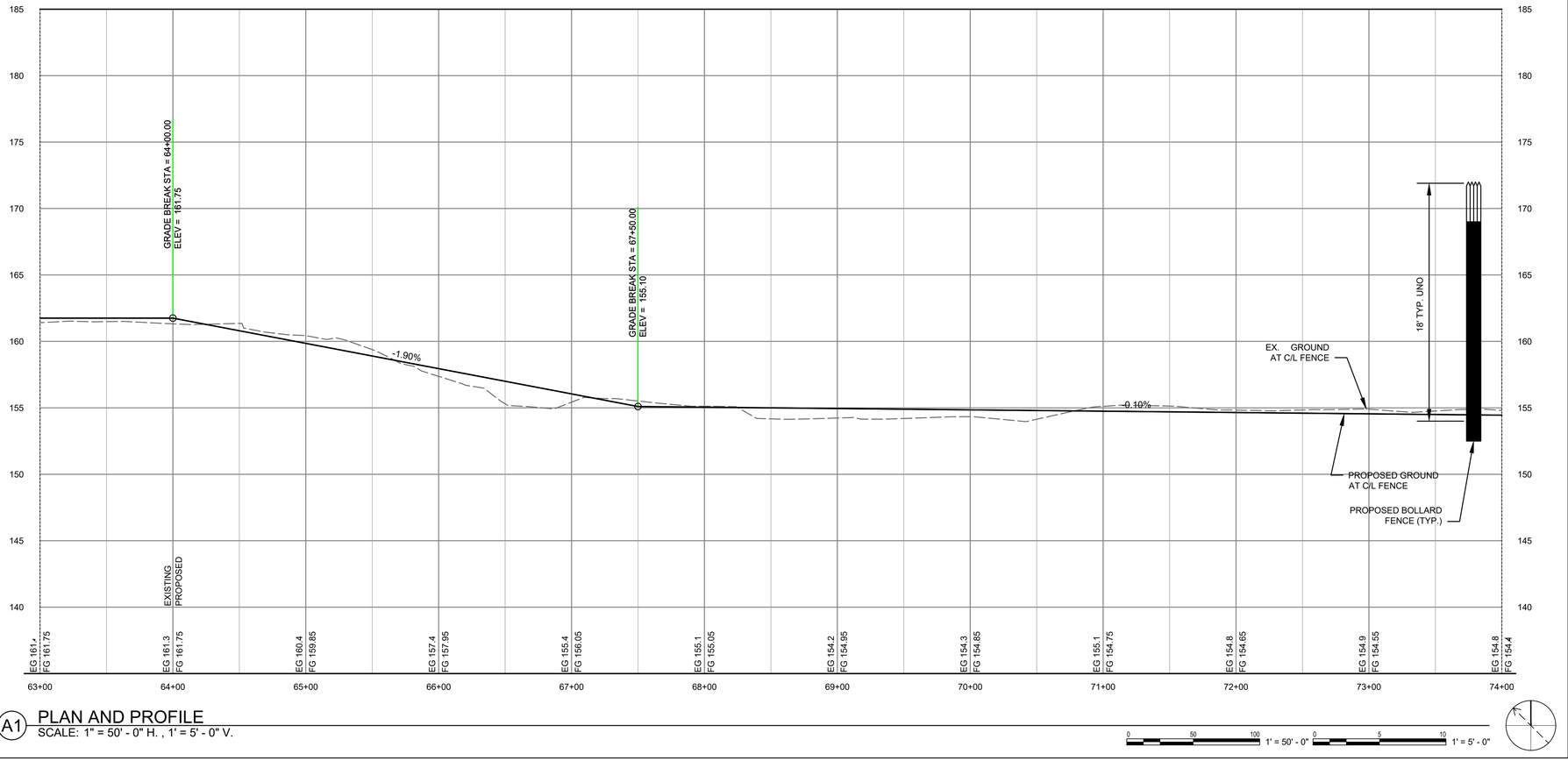
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 52+00.00 - 63+00.00

SHEET ID
RGC
C-105




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

0 50 100 1' = 50' - 0"

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US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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| DESIGNED BY: | ISSUED DATE: |
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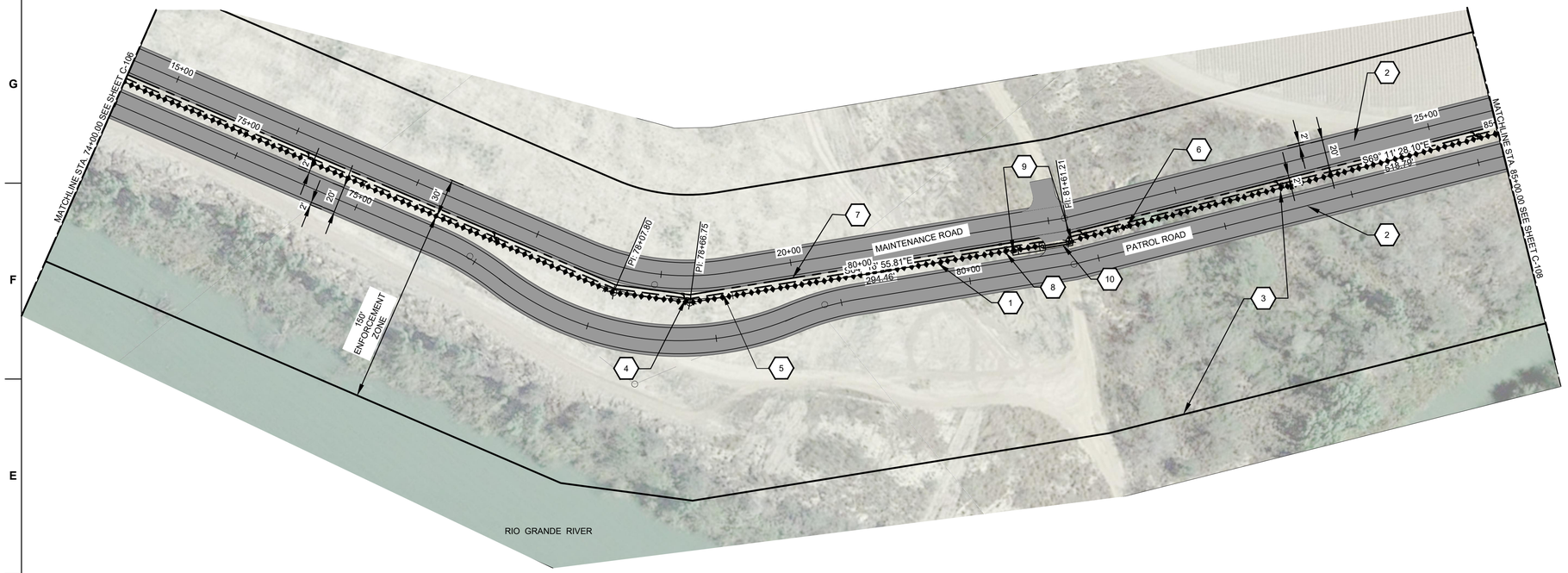
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

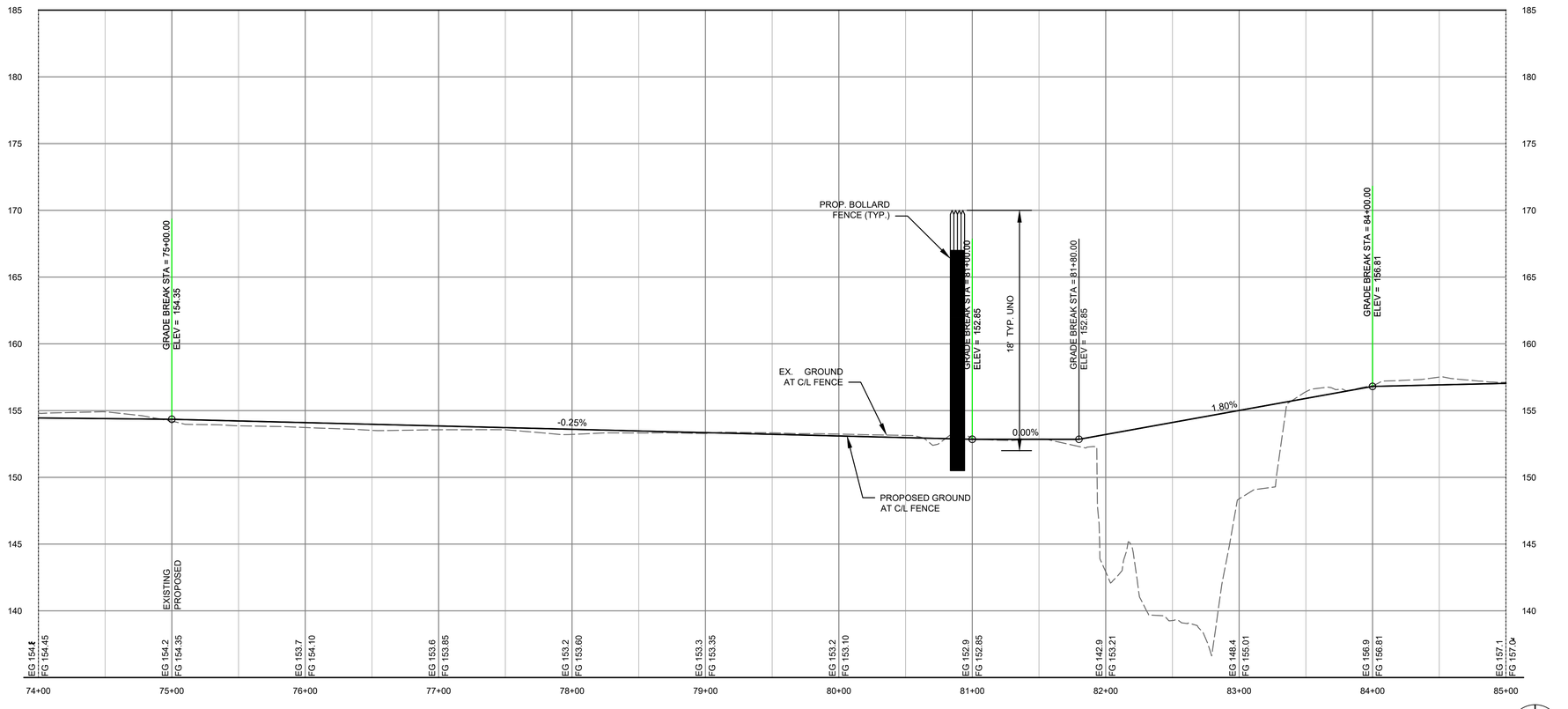
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 63+00.00 - 74+00.00

SHEET ID
RGC
C-106

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US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
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ETEGRA
17218 PRESTON RD., SUITE 3300
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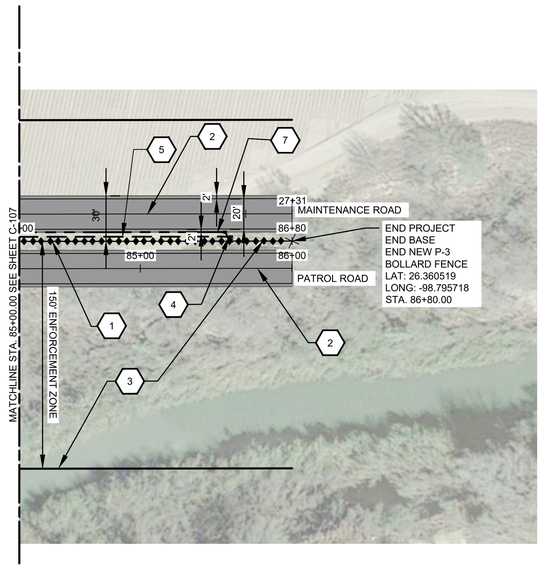
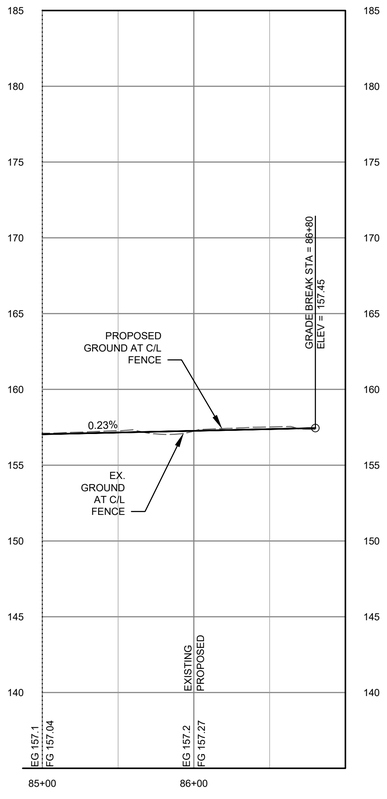
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 74+00.00 - 85+00.00

SHEET ID
RGC
C-107

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US Army Corps of Engineers ®

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RGV 06 - BORDER INFRASTRUCTURE
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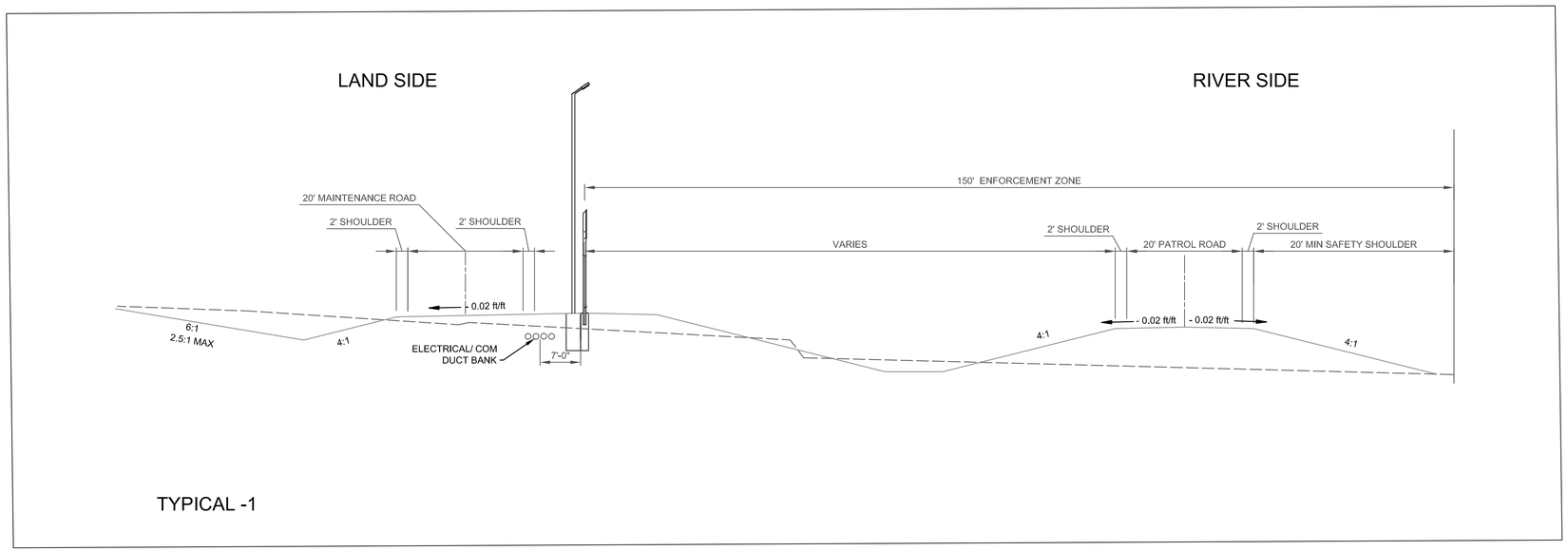
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 85+00.00 - 86+38.00

SHEET ID
RGC
C-108

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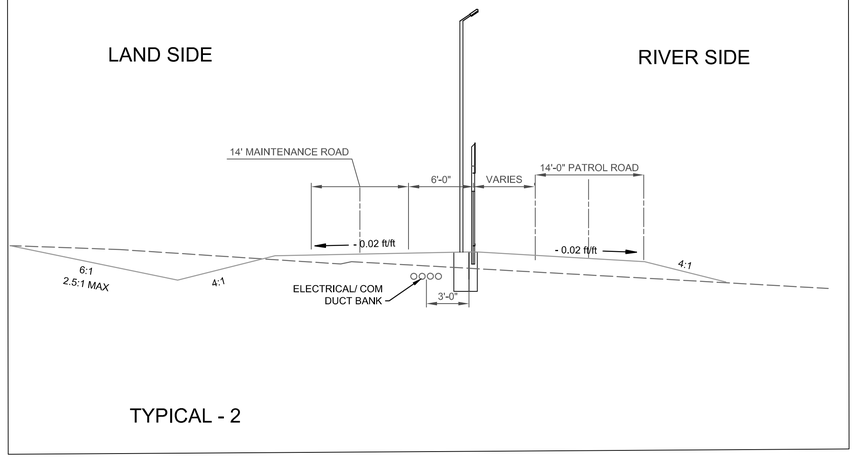


TYPICAL - 2

A1 TYPICAL CROSS SECTION
SCALE: 1" = 150'

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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US ARMY CORPS OF ENGINEERS
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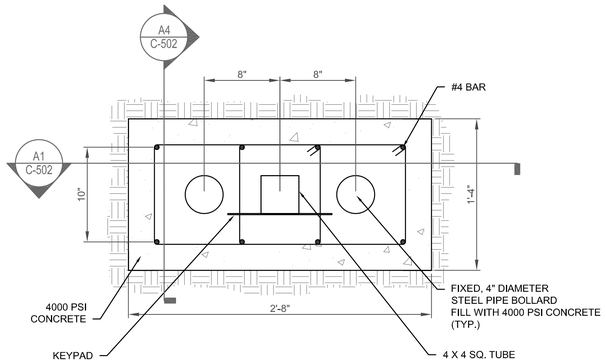
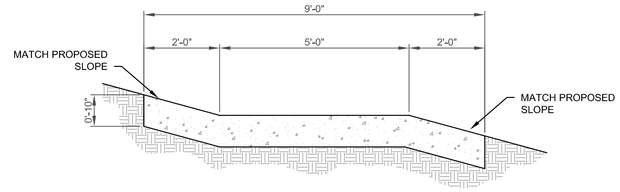
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

# TYPICAL CROSSECTION

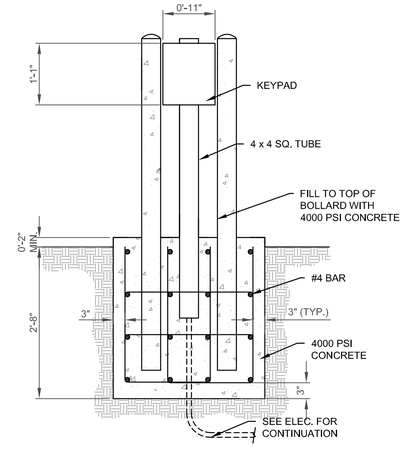
SHEET ID
RGC
C-301



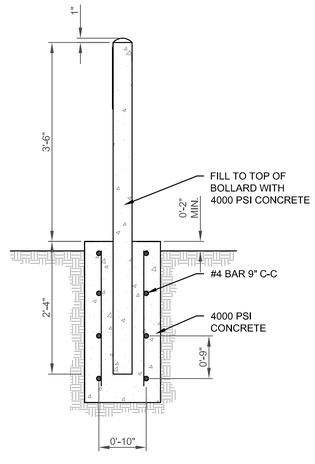

D1 KEYPAD MOUNTING DETAIL
SCALE: N.T.S.



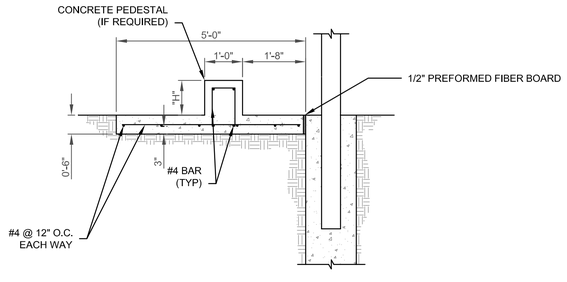

C6 10" CONCRETE ROAD CROSSING SLAB
SCALE: N.T.S.




A1 KEYPAD MOUNTING DETAIL
SCALE: N.T.S.




A4 KEYPAD MOUNTING DETAIL
SCALE: N.T.S.




A6 6" CONCRETE SLAB
SCALE: N.T.S.

## GENERAL NOTES

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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DESIGNED BY: B.PRESTON
DRAWN BY: B.DUNNE
CHECKED BY: B.PRESTON
SUBMITTED BY: B.PRESTON
SIZE: ANSI D
ISSUED DATE:
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:

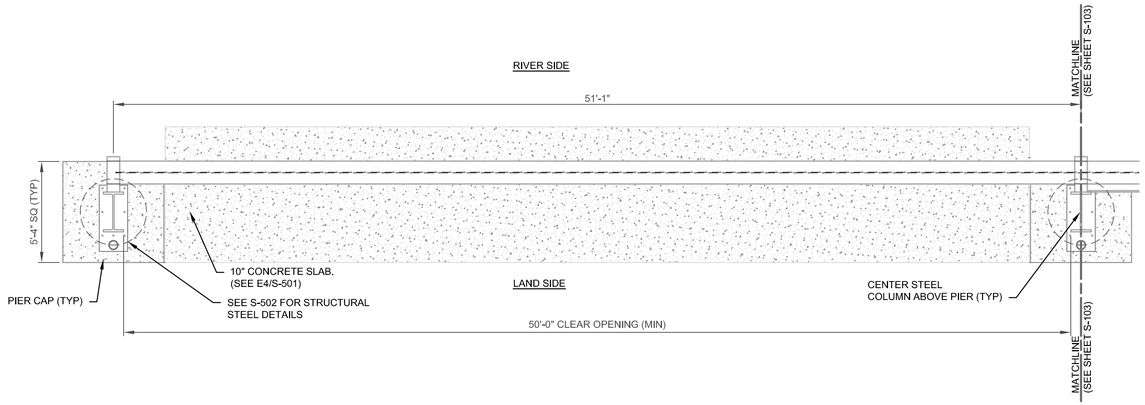
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17216 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

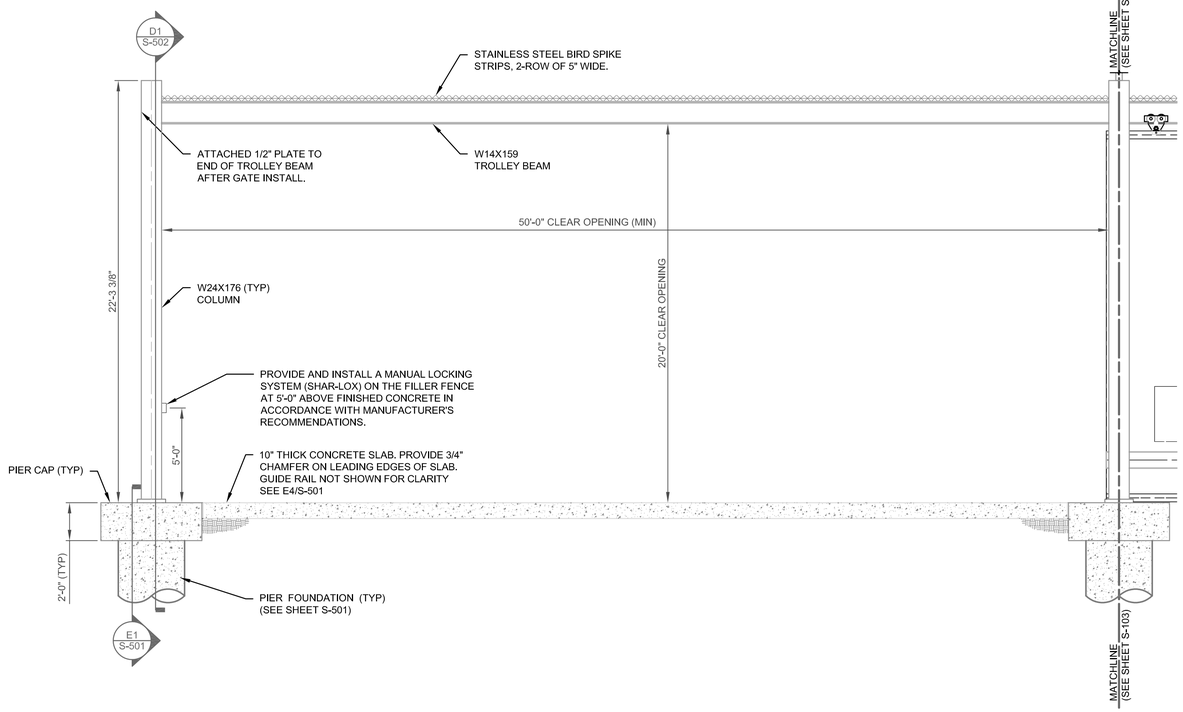
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

# ROAD CROSSING AND KEYPAD MOUNT DETAILS

SHEET ID
RGC
C-501




E2 PLAN - 50 FT. AUTOMATED GATE
SCALE: N.T.S




A2 ELEVATION - 50 FT. AUTOMATED GATE (LOOKING TOWARD RIVER SIDE)
SCALE: N.T.S

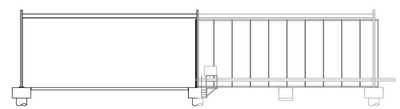
## GENERAL NOTES

1. FOR BASE PLATE AND BOLT DETAIL REFER TO DRAWING S-501 AND S-502.
2. FOR GATE OPERATOR PLATFORM REFER TO DRAWING S-503.
3. PROVIDE STEEL PLATES, WELDED TO TOP OF COLUMNS #1 AND #2 AND BOLTED TO THE LIGHT POST BASEPLATE. SEE DETAIL E7/S-502 FOR DETAILS.
4. ANY GAP BETWEEN FENCE AND GATE SHALL BE NO MORE THAN 4".
5. EARTHWORK SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 31 00 00.
6. INSTALL 1 1/2" DIA GALVANIZED STEEL LADDER TO ACCESS GATE OPERATOR, LADDER RUNGS SHALL BE EQUALLY SPACE (8") 1" SQ GALVANIZED STEEL BARS WITH NON-SLIP TREATMENT ON TOP OF EACH RUNG. PAINT WELDED SURFACES WITH A CORROSION PROTECTIVE COATING AS NEEDED.
7. MINIMUM LADDER OPENING IS 16" IN WIDTH.

## SHEET NOTES

1. SEE SHEET C-501 FOR CROSSING SLAB INFORMATION.

## KEYPLAN



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GALVESTON DISTRICT
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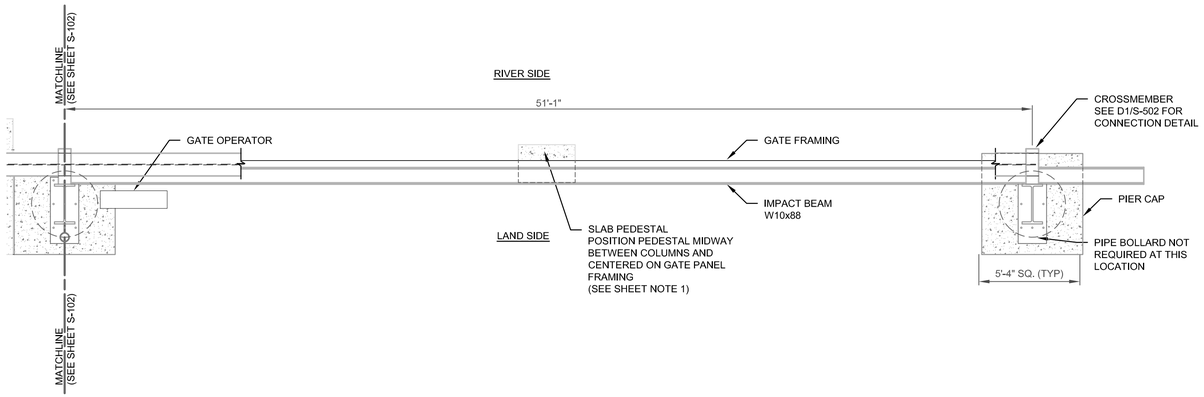
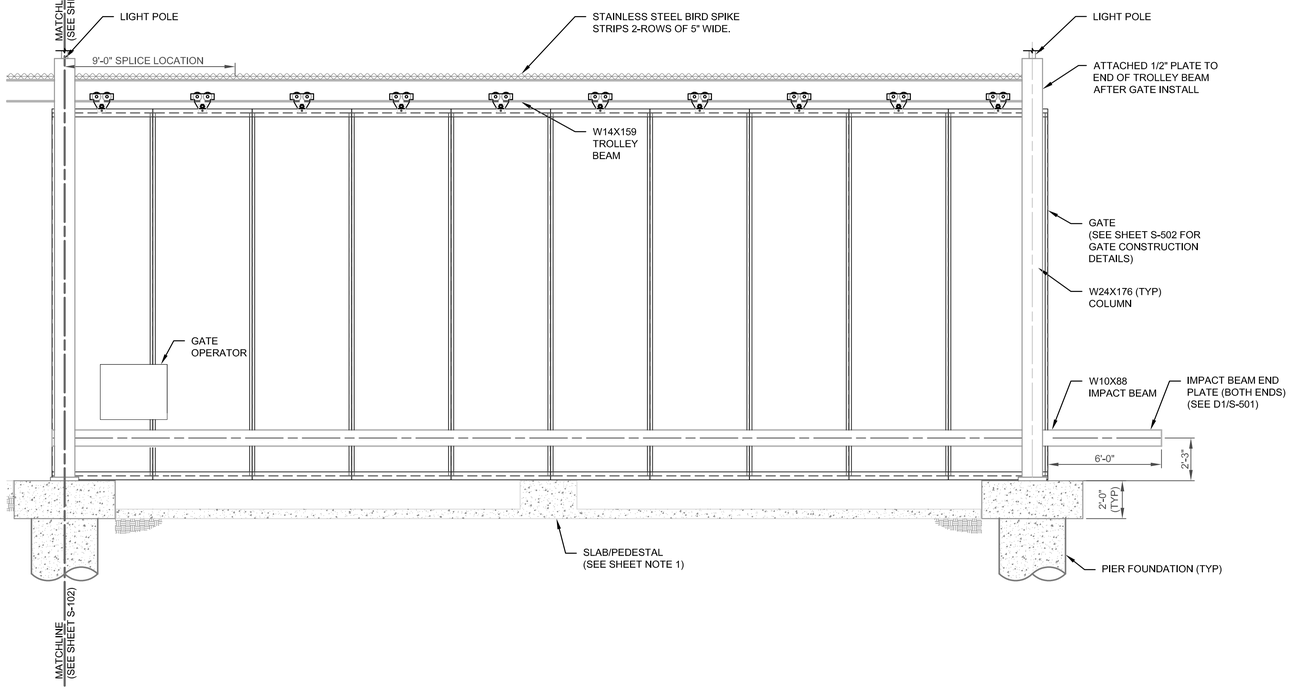
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

# PLAN AND ELEVATION
# 50 FT. SINGLE LEAF AUTOMATED GATE

SHEET ID
RGC
S-102




E2 PLAN - 50 FT. AUTOMATED GATE
SCALE: N.T.S.




A2 ELEVATION - 50 FT. AUTOMATED GATE (LOOKING TOWARD RIVER SIDE)
SCALE: N.T.S.

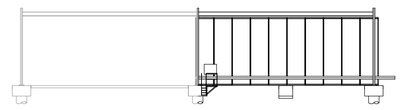
## GENERAL NOTES

1. SEE S-102.

## SHEET NOTES

1. SEE SHEET C-501 FOR CONCRETE SLAB PEDESTAL INFORMATION WHERE REQUIRED.

## KEYPLAN



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US ARMY CORPS OF ENGINEERS
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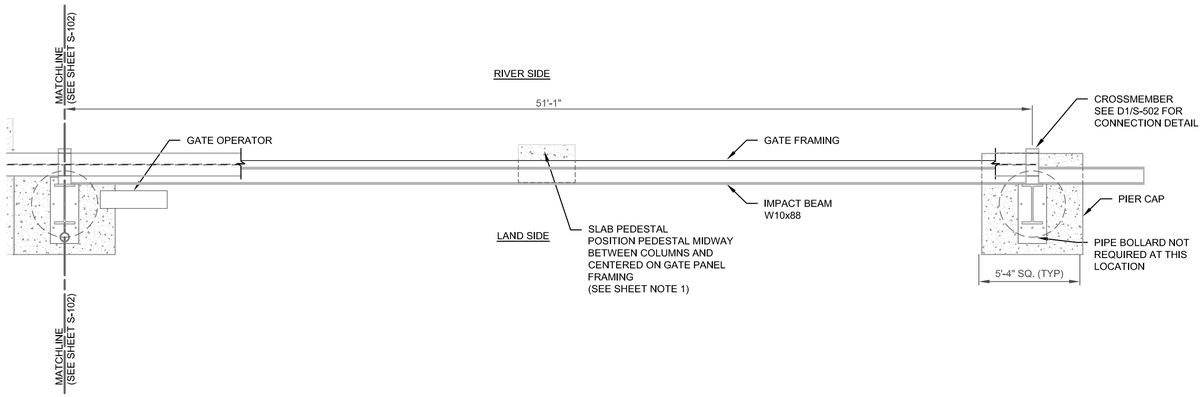
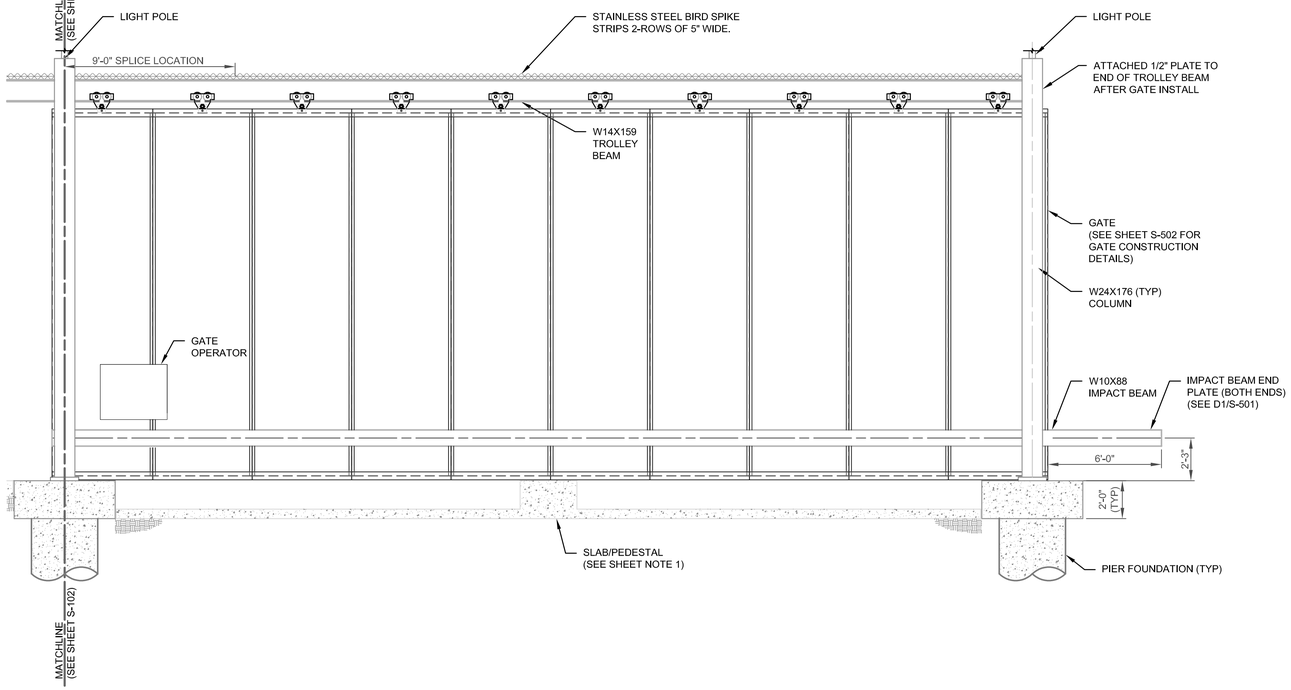
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

# PLAN AND ELEVATION
# 50 FT. SINGLE LEAF AUTOMATED GATE

SHEET ID
RGC
S-103




E2 PLAN - 50 FT. AUTOMATED GATE
SCALE: N.T.S.




A2 ELEVATION - 50 FT. AUTOMATED GATE (LOOKING TOWARD RIVER SIDE)
SCALE: N.T.S.

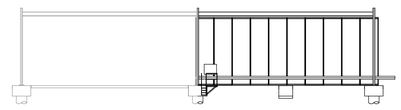
## GENERAL NOTES

1. SEE S-102.

## SHEET NOTES

1. SEE SHEET C-501 FOR CONCRETE SLAB PEDESTAL INFORMATION WHERE REQUIRED.

## KEYPLAN



US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
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GALVESTON, TX 77553-1229

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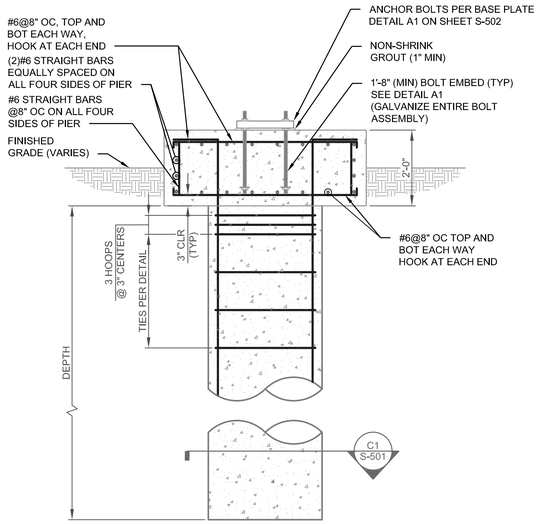
DALLAS, TX. 75252

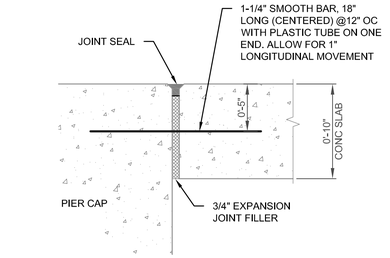
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

# PLAN AND ELEVATION
# 50 FT. SINGLE LEAF AUTOMATED GATE

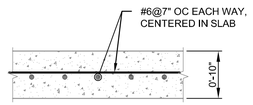
SHEET ID
RGC
S-103




E1 PIER FOUNDATION / PILE CAP REINFORCING DETAIL
SCALE: N.T.S.




F4 SLEEVED EXPANSION JOINT
SCALE: N.T.S.




E4 CONCRETE SLAB REINFORCING
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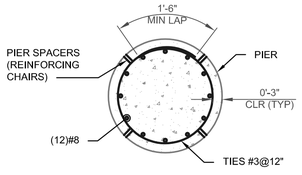
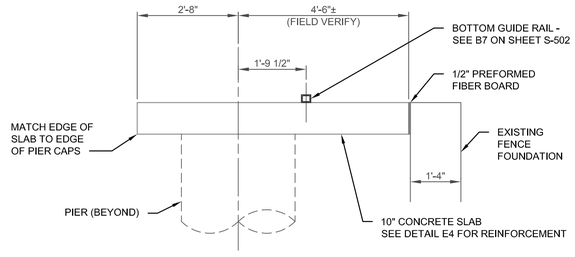
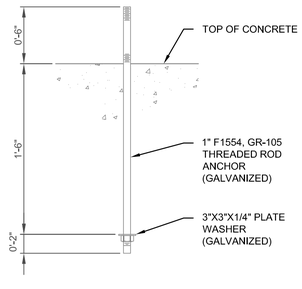



C1 PIER FOUNDATION SECTION
SCALE: N.T.S.




C4 CONCRETE SLAB SIZING DETAIL
SCALE: N.T.S.




A1 ANCHOR BOLT DETAIL
SCALE: N.T.S.

US Army Corps of Engineers ®

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CONTRACT NO.:
FILE NUMBER:

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
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GALVESTON, TX 77553-1229

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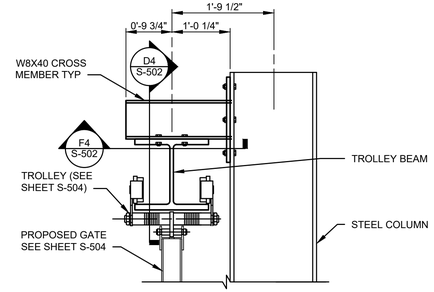
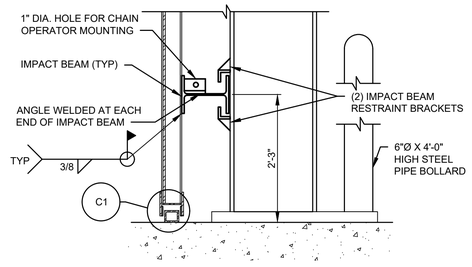
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

CONCRETE DETAILS

SHEET ID
RGC
S-501




## D1 STRUCTURAL COLUMN SECTION
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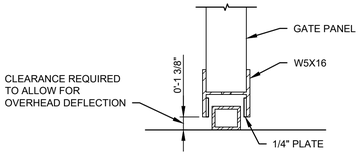
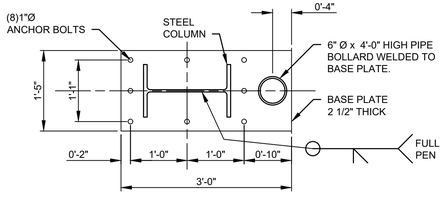
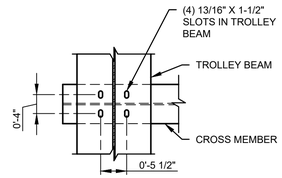


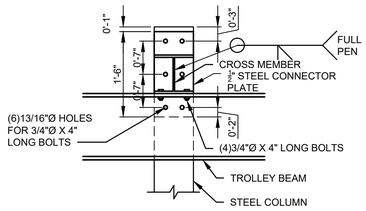

## C1 BOTTOM RAIL GUIDE
SCALE: N.T.S.



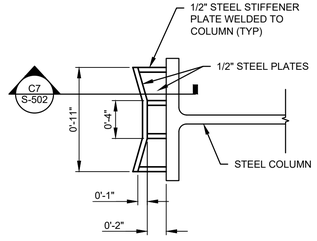

## A1 DETAIL - COLUMN BASE PLATE
SCALE: N.T.S.



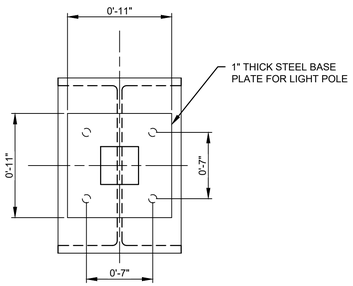

## F4 DETAIL
SCALE: N.T.S.

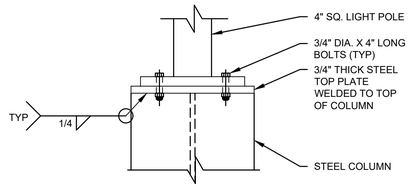



## D4 DETAIL
SCALE: N.T.S.

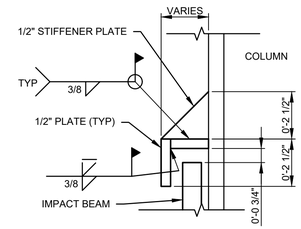



## B4 DETAIL - IMPACT BEAM BRACKETS
SCALE: N.T.S.

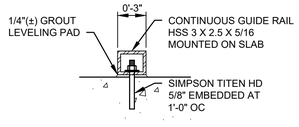



## E7 DETAIL - LIGHT POLE CONNECTION
SCALE: N.T.S.




## C7 IMPACT BEAM SECTION
SCALE: N.T.S.




## B7 BOTTOM RAIL DETAIL
SCALE: N.T.S.

## GENERAL NOTES

## SHEET NOTES

1. INSTALL DRAINAGE HOLES AT 1'-0" O.C. ON THE IMPACT BEAM.
2. BOLLARDS SHALL BE INSTALLED ONLY BY COLUMNS NEXT TO THE ROAD.
3. SEAL INSTALLATION HOLES ON THE GUIDE RAIL.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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DESIGNED BY: X
DRAWN BY: X
CHECKED BY: X
SUBMITTED BY: X
ISSUED DATE:
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
SIZE: ANSI D

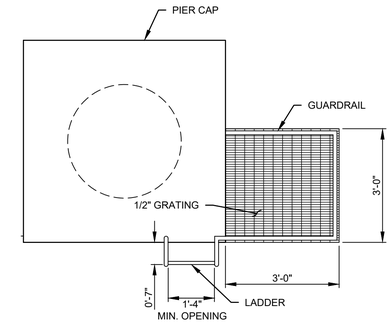
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

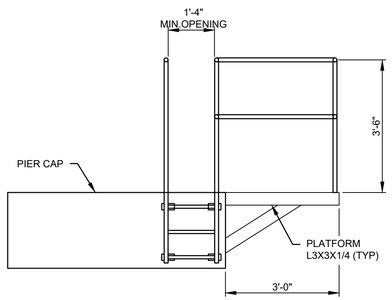
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

STRUCTURAL DETAILS

SHEET ID
RGC
S-502




E1 OPERATOR PLATFORM - PLAN
SCALE: N.T.S.




C1 OPERATOR PLATFORM - ELEVATION
SCALE: N.T.S.

## GENERAL NOTES

## SHEET NOTES

1. ACCESS LADDER NOT REQUIRED ON THE SITE IF DIFFERENCE BETWEEN TOP OF PIER CAP AND GRADE IS 1'-0" OR LESS.
2. CONTRACTOR TO DESIGN OPERATOR PLATFORM WHERE REQUIRED.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:

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US ARMY CORPS OF ENGINEERS
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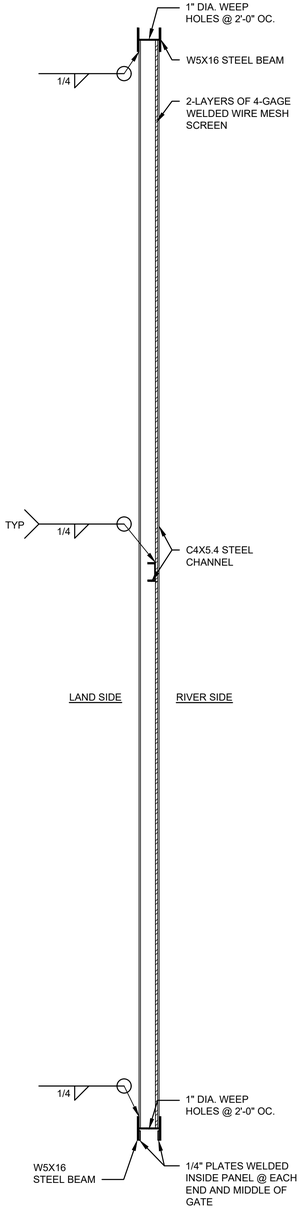
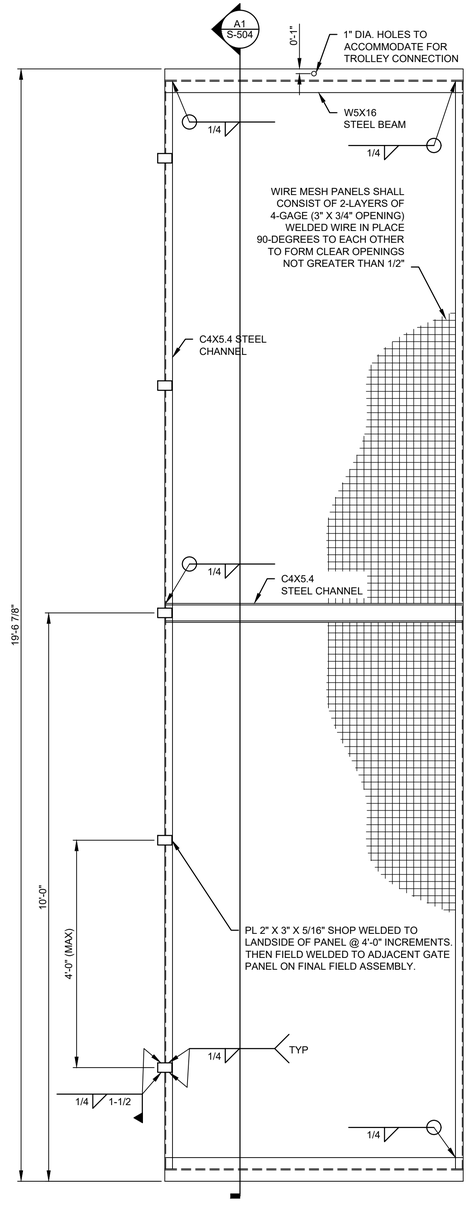
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

# STRUCTURAL DETAILS

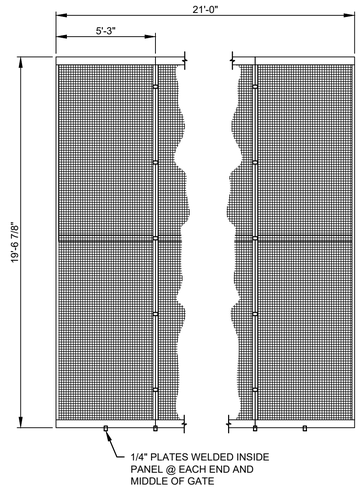
SHEET ID
RGC
S-503



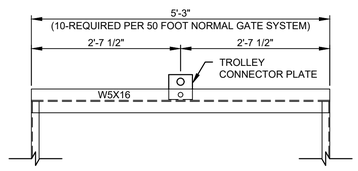

A1 SECTION
SCALE: N.T.S.



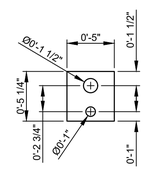

A3 ELEVATION
SCALE: N.T.S.



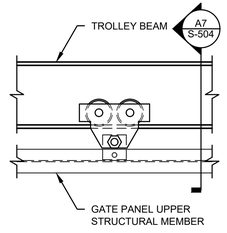

E5 ELEVATION - WIRE MESH GATES (TYP.)
SCALE: N.T.S.



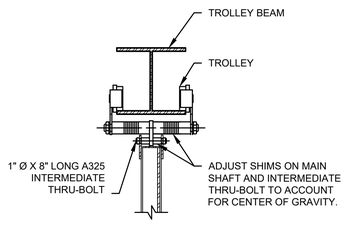

C5 DETAIL - TROLLEY CONNECTOR PLATE
SCALE: N.T.S.




A5 DETAIL - TROLLEY CONNECTOR PLATES
SCALE: N.T.S.




C7 DETAIL - TROLLY CONNECTION
SCALE: N.T.S




A7 SECTION THROUGH TROLLEY
SCALE: N.T.S.

## GENERAL NOTES

## SHEET NOTES

1. JOIN COMPLETED PANELS TOGETHER IN FIELD USING WELD PLATES AND STITCH WELDS AS SHOWN.
2. AFTER GATE PANELS ARE ASSEMBLED, ATTACH OPERATOR GUIDE RAIL, IMPACT BEAM, AND OTHER APPURTENANCES IN THEIR APPROPRIATE POSITIONS FOR OPERATION.
3. REFER TO ELECTRIC AND CONTROL SCHEMATICS, FOR ATTACHMENT OF OTHER CONTROLS.
4. THE MESH SHALL BE POSITIONED SUCH THAT ONLY 3/4" ON CENTER VERTICAL BARS ARE PLACED ON THE RIVER SIDE.
5. STEEL FASTENERS SHALL CONFORM TO ASTM F3125 AND ASTM A325, AND SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
6. THE CONNECTOR PLATE DETAILED ON DETAIL A5 SHALL BE FABRICATED AND USED IN LIEU OF THE TROLLEY MANUFACTURER'S CONNECTOR PLATE.
7. CONNECTOR PLATE SHALL BE BOLTED TO THE UPPER FRAMING MEMBER OF THE PANELS.
8. WELDING SCHEME FOR DOUBLE LAYER 4-GAGE WIRE MESH:
   - VERTICAL COMPONENT OF WIRE MESH SHALL BE POSITIONED FACING RIVER SIDE.
   - WIRE MESH LAYERS SHALL BE SPOT-WELDED TO EACH OTHER ON APPROXIMATE 12" CENTERS, OR AS REQUIRED TO PREVENT WARPING.
   - WIRE MESH LAYERS SHALL BE WELDED TOGETHER AND AT THE GATE PANEL PERIMETER ON APPROXIMATE 12" CENTERS, OR AS REQUIRED TO PREVENT WARPING.
   - WIRE MESH SHALL ALSO BE WELDED TO C4X5.4 CROSS-FRAMING AT 12" CENTERS TOP AND BOTTOM OF CHANNEL.
9. INSTALL ONE TROLLEY PER PANEL.

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ISSUED DATE:
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CONTRACT NO.:
FILE NUMBER:

DESIGNED BY: X
DRAWN BY: X
CHECKED BY: X
SUBMITTED BY: X
SIZE: ANSI D

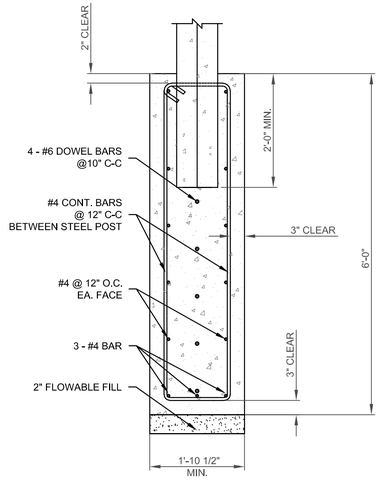
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

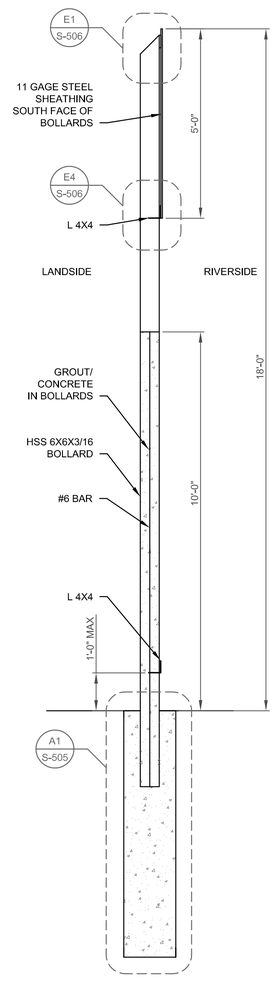
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

# WIRE MESH PANEL DETAILS

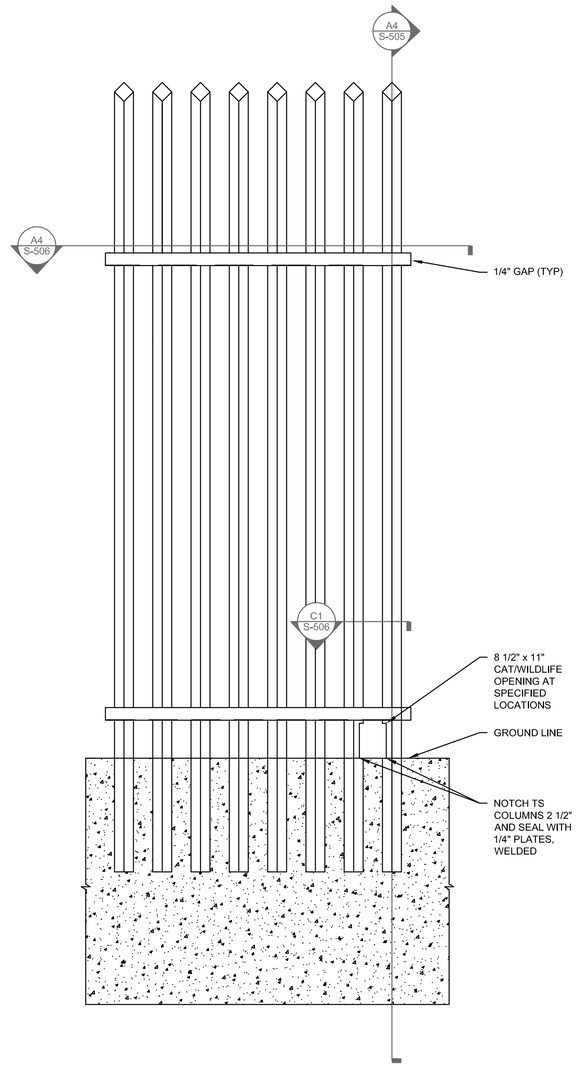
SHEET ID
RGC
S-504




A1 BOLLARD FENCE FOUNDATION
SCALE: N.T.S.




A4 BOLLARD FENCE SECTION
SCALE: N.T.S.




A7 TYPICAL 8' SECTION BOLLARD FENCE
SCALE: N.T.S.

## GENERAL NOTES

1. 6" MIN. CLR. REQUIRED BETWEEN BOTTOM OF HSS & BOTTOM OF FOUNDATION.
2. CONCRETE TO BE 4000 PSI.
3. STEEL BOLLARDS SHALL BE ASTM A500 GRADE B. REFERENCE TECHNICAL SPECIFICATIONS FOR ALL OTHER MATERIAL REQUIREMENTS NOT PROVIDED IN THE DRAWINGS.
4. PLACE A 2" (MIN) FLOWABLE FILL MUD-MAT AFTER EXCAVATION FOR THE BOLLARD FENCE FOUNDATION. MUD MAT TO ACT AS A LEVELING PAD FOR THE FOUNDATION.
5. AT LOCATIONS DIRECTED BY CBP, NOTCH TWO ADJACENT BOLLARDS 2 $\frac{1}{2}$" TO HEIGHT REQUIRED TO PROVIDE 8 $\frac{1}{2}$" x 11" CAT OPENING.
6. BOLLARD FILLER FENCE WILL BE SUPPORTED ON A 6-FOOT-DEEP FOUNDATION. THE FINAL REPORT WILL PROVIDE FOOTING BEARING AND SUBGRADE PREPARATION CRITERIA FOR SUPPORT ON STIFF, LEAN AND FAT, CLAYEY NATIVE SOILS, WHICH WILL LIKELY INCLUDE 1) AN ALLOWABLE BEARING PRESSURE OF 2,000 PSF; 2) CLEANING OF LOOSENED OR SLOUGHED SOILS PRIOR TO CONCRETE PLACEMENT; 3) REVIEW OF PREPARED BEARING SURFACES PRIOR TO REINFORCING STEEL AND CONCRETE PLACEMENT; AND 4) PLACEMENT OF A MINIMUM 2" THICK CONCRETE MUD MAT IMMEDIATELY FOLLOWING BEARING SURFACE REVIEW AND PRIOR TO REINFORCING STEEL PLACEMENT IN ORDER TO LIMIT ANY CHANGES IN THE IN-SITU SUBGRADE MOISTURE CONTENT.

US Army Corps of Engineers ®

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| SOLICITATION NO.: | |
| CONTRACT NO.: | |
| FILE NUMBER: | |

DESIGNED BY: B.PRESTON
DRAWN BY: B.DUNNE
CHECKED BY: B.PRESTON
SUBMITTED BY: B.PRESTON
SIZE: ANSI D

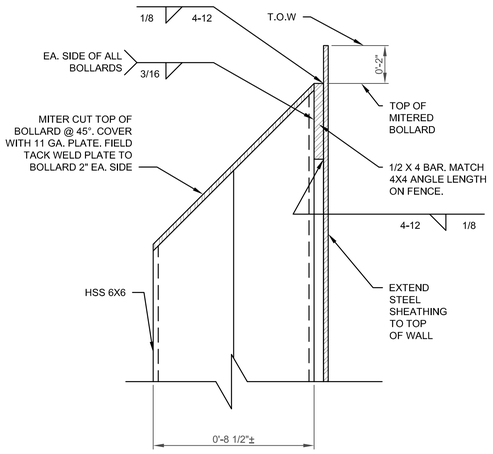
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

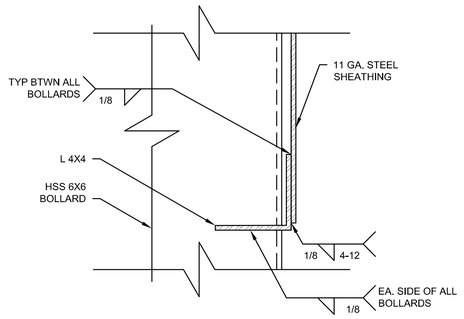
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

FENCE DETAILS
20 FT. FENCE

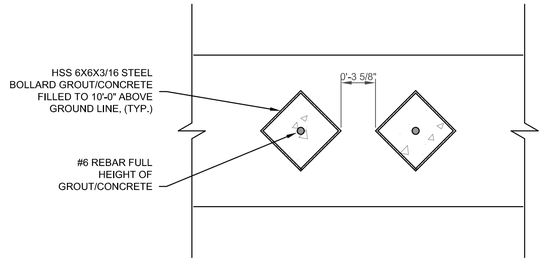
SHEET ID
RGC
S-505



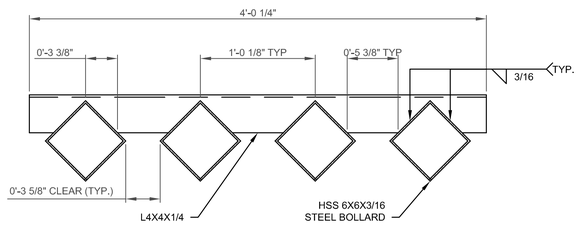

E1 TOP OF FENCE DETAIL
SCALE: N.T.S.



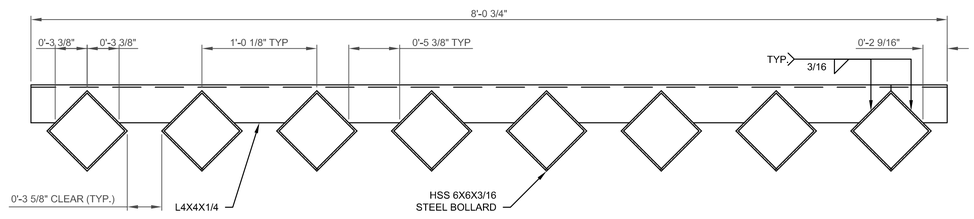

E4 BOTTOM OF SHEATHING DETAIL
SCALE: N.T.S.




C1 BOLLARD FENCE DETAIL
SCALE: N.T.S.




A1 BOLLARD FILLER FENCE
SCALE: N.T.S.




A4 BOLLARD FENCE
SCALE: N.T.S.

## GENERAL NOTES

1. 6" MIN. CLR. REQUIRED BETWEEN BOTTOM OF HSS & BOTTOM OF FOUNDATION.
2. CONCRETE TO BE 4000 PSI.
3. STEEL BOLLARDS SHALL BE ASTM A500 GRADE B. REFERENCE TECHNICAL SPECIFICATIONS FOR ALL OTHER MATERIAL REQUIREMENTS NOT PROVIDED IN THE DRAWINGS.

XX

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| DESIGNED BY: | B.PRESTON |
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| SUBMITTED BY: | B.PRESTON |
| SIZE: | ANSI D |

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RGV 06 - BORDER INFRASTRUCTURE
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CONSTRUCTION OF BOLLARD FENCE

# FENCE DETAILS 20 FT. FENCE

SHEET ID
RGC
S-506

# ONE-LINE AND RISER

KVA,CLG
HV-LV
Z
POWER TRANSFORMER

AMP
*
LOW VOLTAGE CIRCUIT BREAKER, DRAWOUT:
E.O. = ELECTRICALLY OPERATED
G = GROUND
I = INSTANTANEOUS
IA = INSTANTANEOUS AMPS
LT = LONG TIME
M.O. = MANUALLY OPERATED
ST = SHORT TIME
S = SENSOR RATING

A
MOLDED CASE CIRCUIT BREAKER

AF
MEDIUM VOLTAGE CIRCUIT BREAKER, DRAWOUT

MINIATURE CIRCUIT BREAKER

AMP
FUSE
FUSED CUT-OUT SWITCH

AMP
AMP
FUSED DISCONNECT SWITCH

AMP
NON-FUSED DISCONNECT SWITCH

AF
AT
SIZE
*
COMBINATION CIRCUIT BREAKER WITH STARTER:
FVNR = FULL VOLTAGE NON-REVERSING
FVR = FULL VOLTAGE REVERSING
2S = TWO SPEED
1W = ONE WINDING
2W = TWO WINDING
C = CONTACTOR
SFT = SOFT START

AMP
FUSE
MEDIUM VOLTAGE MOTOR STARTER

PANELBOARD

TRANSFER SWITCH (AUTOMATIC OR MANUAL)

CONVERTER OR VFD
* = ~ = AC, - = DC

HP
MOTOR

KW
KVA
GEN
PF
Z
GENERATOR

*
LOCAL CONTROL:
OP = CONTROL PANEL
HTR = HEATER
SKD = SKID MOUNTED LOAD
VFD = VARIABLE FREQUENCY DRIVE
HOA = HAND/OFF/AUTO

KV
MCOV
SURGE ARRESTOR

AMP
FUSE

BATTERY

OPEN DELTA

IMPEDANCE GROUNDED WYE

GROUND

DELTA

SOLID GROUNDED WYE

*
MULTIFUNCTION RELAY OR METER (* NOTE 5)

(QTY)
PRI:SEC
ACCUR
VOLTAGE TRANSFORMER

(QTY)
PRI/SEC
ACCUR
CURRENT TRANSFORMER
■ INDICATES POLARITY

PRI/SEC
ACCUR
CURRENT TRANSFORMER, ZERO SEQUENCE

WH
WATT HOUR METER

# RACEWAY AND LINE TYPES

CONDUIT STUB WITH CAP

CONDUIT:
EMBEDDED
EXPOSED
UNDERGROUND DIRECT BURIAL

C
CONDUIT TURN-DOWN

O
CONDUIT TURN-UP

J
JUNCTION BOX

BUS
POWER CIRCUIT
CT & VT CIRCUIT
CONTROL CIRCUIT
COMMUNICATION
ELECTRICAL ENCLOSURE
$E_X$
EXISTING OVERHEAD ELECTRICAL LINES
NEW UNDERGROUND COMMUNICATIONS DUCTBANK
NEW UNDERGROUND ELECTRICAL DUCTBANK
INDICATES CABLE NUMBER

HOME RUN CONDUIT - SHORT STROKES INDICATE PHASE OR SWITCHED WIRES, LONG STROKES INDICATE NEUTRAL, LONG STROKES WITH DOT INDICATE GROUND CONDUCTORS, LONG STROKES WITH TICK INDICATE ISOLATED GROUND

# PLAN VIEW

T
TRANSFORMER

NON-FUSED DISCONNECT SWITCH

FUSED DISCONNECT SWITCH

COMBINATION DISCONNECT WITH STARTER

HP
HORSEPOWER RATED DISCONNECT SWITCH

PANELBOARD, 480Y/277V OR 480V

PANELBOARD, 208Y/120V OR 120/240V

SERVICE ENTRANCE METER

XFR
TRANSFER SWITCH (AUTOMATIC OR MANUAL)

M
MOTOR

GEN
GENERATOR

LOCAL CONTROL PANEL

SPECIAL PURPOSE RCPT OR CONNECTION, 480V

SPECIAL PURPOSE RCPT OR CONNECTION, 240V

MH
MANHOLE

HH
HANDHOLE

*
SINGLE RECEPTACLE

*
DUPLEX RECEPTACLE

*
FOURPLEX RECEPTACLE

J
SURFACE RACEWAY (WIREMOLD)

COIL

# LIGHTING

(SEE NOTE 3)

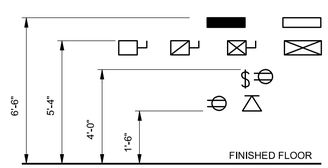
X
LED BOLLARD LIGHT

X
HID/INCANDESCENT, WALL MOUNTED

X
HID/INCANDESCENT, POLE MOUNTED

EMERGENCY BATTERY OPERATED UNIT

# ELECTRICAL DEVICE MOUNTING HEIGHT




# LIGHTING CONTINUED

EXIT SIGN, SINGLE FACE, CEILING MOUNT

EXIT SIGN, DOUBLE FACE, CEILING MOUNT

EXIT SIGN, ARROW INDICATES DIRECTION

WALL MOUNT

*
LIGHTING CONTROL:
LC = LIGHTING CONTACTOR
OC = OCCUPANCY SENSOR
PE = PHOTOELECTRIC CELL
TC = TIME CLOCK
C = CONTACTOR
PSR = PHOTO SENSOR - RECEIVER
PST = PHOTO SENSOR - TRANSMITTER

SWITCH, SINGLE POLE

*
SWITCH:
3 = THREE-WAY
4 = FOUR-WAY
D = DIMMER
K = KEY OPERATED
P = PILOT
a,b,c = DENOTES SWITCHING CONTROL

PS
SAFETY PHOTO SENSOR

ML
MAGLOCK

KP
SECURITY KEYPAD

# COMMUNICATION

TEL
TELEPHONE PANEL

TTB
TELEPHONE TERMINAL BOARD

AMP
AMPLIFIER

CCTV SURVEILLANCE CAMERA, FIXED

CCTV SURVEILLANCE CAMERA, PAN/ZOOM/TILT

WALL MOUNT

# GROUNDING

GROUND CONDUCTOR

LIGHTNING PROTECTION CONDUCTOR

GROUND

GROUND ROD

LIGHTNING PROTECTION AIR TERMINAL

LIGHTNING PROTECTION SPHERE

THROUGH ROOF TERMINAL

GROUNDING CONNECTION TO STRUCTURE

FLUSH GROUND PLATE

GROUND CONDUCTOR CONNECTION

GROUNDING PIGTAIL

# GENERAL NOTES

1. ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THIS LEGEND MAY NOT APPEAR ON THIS SET OF DRAWINGS.
2. FOR GENERAL LEGEND AND ABBREVIATIONS, SEE "GG" DRAWINGS.
3. X ON FIXTURE SYMBOL DENOTES FIXTURE TYPE DESIGNATION. SEE FIXTURE SCHEDULE.
4. USE DIRECTIONAL ARROW ON EXIT SIGNS AS REQUIRED.
5. IEEE STANDARD C37.2-1991, ELECTRICAL POWER SYSTEM DEVICE FUNCTION NUMBERS.

# ELECTRICAL ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS INDICTED MAY APPEAR ON THESE DRAWINGS

| | |
|---|---|
| ABOVE FINISH FLOOR | AFF |
| ABOVE FINISHED GRADE | AFG |
| ACCENT | ACC |
| ADJUSTABLE | ADJ |
| ALTERNATING CURRENT | AC |
| ALUMINUM | AL |
| AMERICAN WIRE GAUGE | AWG |
| AMMETER | AM |
| AMPERE | A/AMP |
| APPROXIMATE(LY) | APPROX |
| ASYMMETRIC | ASY |
| AUTOMATIC TRANSFER SWITCH | ATS |
| BATTERY | BATT |
| BLACK | BLK |
| BRACKET | BRKT |
| BREAKER | BKR |
| CABINET | CAB |
| CABLE TELEVISION | CATV |
| CEILING | CLG |
| CIRCUIT | CKT |
| CIRCUIT BREAKER | CKT BKR |
| CLEAR | CLR |
| CLOSED CIRCUIT TELEVISION | CCTV |
| COLUMN | COL |
| COMMUNICATION | COMM |
| CONDUIT | C |
| COOL WHITE | CW |
| COPPER | CU |
| CURRENT LIMITING FUSE | CLF |
| CURRENT TRANSFORMER | CT |
| DECIBEL | DB |
| DEDICATED | DED |
| DIAMETER | DIA |
| DIRECT CURRENT | DC |
| DISCONNECT | DISC |
| DISTRIBUTION PANEL | DP |
| DOUBLE POLE DOUBLE-THROW | DPDT |
| DOWNLIGHT | DNLT |
| DRAWING | DWG |
| DUAL ELEMENT | DE |
| EACH | EA |
| ELECTRIC WATER COOLER | EWC |
| ELECTRICAL | ELEC |
| ELECTRICAL CONTRACTOR | EC |
| ELECTRICALLY OPERATED | ED |
| ELEVATION | EL |
| ELEVATOR | ELEV |
| EMERGENCY LIGHTING | EM |
| ENERGY SAVING BALLAST | ESB |
| EQUIPMENT | EQUIP |
| EXHAUST FAN | EF |
| EXPLOSION PROOF | XP |
| FIRE ALARM | FA |
| FIRE ALARM ANNUNCIATOR | FAAP |
| PANEL | FACP |
| FIRE ALARM CONTROL PANEL | FAGP |
| FIRE ALARM GRAPHIC PANEL | ANNUN |
| FIRE ANNUNCIATOR PANEL | FIXT |
| FIXTURE | FL |
| FLOOR | FLUOR |
| FLUORESCENT | FC |
| FOOTCANDLES | FLA |
| FULL LOAD AMPERES | FVNR |
| FULL VOLTAGE NON-REVERSING | |
| GENERAL CONTRACTOR | GC |
| GENERATOR | GEN |
| GROUND | GND/G |
| GROUND FAULT CIRCUIT INTERRUPTER | GFCI |
| HAND DRYER | HD |
| HAND HOLE | HH |
| HEATING VENTILATING AND AIR CONDITIONING | HVAC |
| HERTZ | HZ |
| HIGH INTENSITY DISCHARGE | HID |
| HIGH POWER FACTOR | HPF |
| HIGH VOLTAGE | HV |
| HORSEPOWER | HP |
| INCANDESCENT | INCAN |
| ISOLATED GROUND | IG |
| JUNCTION BOX | JB OR JCT BOX |

| | |
|---|---|
| KILOVAR (REACTANCE) | KVAR |
| KILOVOLT AMPERE | KVA |
| KILOWATT | KW |
| KILOWATT HOUR METER | KWH |
| LIGHT | LT |
| LIGHTING | LTG |
| LIGHTING ARRESTOR | LA |
| LOW VOLTAGE | LV |
| MAIN CIRCUIT BREAKER | MCB |
| MAIN DISTRIBUTION PANEL | MDP |
| MAIN LUGS ONLY | MLO |
| MANHOLE | MH |
| MANUAL TRANSFER SWITCH | MTS |
| MANUFACTURER | MFR |
| MASTER ANTENNA TELEVISION | MATV |
| MECHANICAL CONTRACTOR | MC |
| MEDIUM VOLTAGE | MV |
| METAL HALIDE | MH |
| METAL-CLAD CABLE | MC |
| MISCELLANEOUS | MISC |
| MOTOR CIRCUIT PROTECTOR | MCP |
| MOTOR CONTROL CENTER | MCC |
| MOTOR OPERATED DAMPER | MOD |
| MOUNTED | MTD |
| MOUNTING HEIGHT | MTG HT |
| NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION | NEMA |
| NATIONAL ELECTRICAL CODE | NEC |
| NIGHT LIGHT | NL |
| NORMALLY CLOSED | NC |
| NORMALLY OPEN | NO |
| NOT AVAILABLE/NOT APPLICABLE | N/A |
| NOT FUSED | NF |
| NOT IN CONTRACT | NIC |
| NOT TO SCALE | NTS |
| ON CENTER | OC |
| OVERHEAD | OH |
| OVERLOAD HEATER ELEMENT | OL |
| PANEL | PNL |
| PEWTER | PEW |
| PLYWOOD | PLY |
| POLE | P |
| POLYVINYL CHLORIDE | PVC |
| POTENTIAL TRANSFORMER | PT |
| POWER PANEL | PP |
| PULL BOX | PB |
| RAPID START | RS |
| RECEPTACLE | REC/RECPT |
| REFLECTOR | REFL |
| REQUIRED | REQ'D |
| RIGID GALVANIZED STEEL CONDUIT | RGS |
| ROOM | RM |
| SCHEDULE | SCHED |
| SINGLE POLE DOUBLE THROW | SPDT |
| SINGLE POLE SINGLE THROW | SPST |
| SOLID STATE BALLAST | SSB |
| SURGE PROTECTION DEVICE | SPD |
| SWITCH | SW |
| SWITCHBOARD | SWBD |
| SWITCHGEAR | SWGR |
| TELEPHONE | TEL |
| TRANSFORMER | XFMR |
| TRANSIENT VOLTAGE SURGE SUPPRESSOR | TVSS |
| TWIN TUBE | TT |
| TYPICAL | TYP |
| UNDERGROUND | UG |
| UNDERWRITERS' LABORATORIES | UL |
| UNINTERRUPTIBLE POWER SUPPLY | UPS |
| UNLESS OTHERWISE NOTED | UON |
| VAPOR PROOF | VP |
| VOLT | V |
| VOLTMETER | VM |
| WARM WHITE | WW |
| WATT | W |
| WEATHERPROOF | WP |
| WITH | W/ |
| WITHIN | W/I |
| WITHOUT | W/O |

US Army Corps of Engineers ®

| DATE | DESCRIPTION | MARK |
|---|---|---|
| | | |

ISSUED DATE:
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
DESIGNED BY: M.J. HILL
DRAWN BY: D.A. NELSON
CHECKED BY:
SUBMITTED BY:
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
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17218 PRESTON RD., SUITE 3300
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RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
LEGEND AND ABBREVIATIONS

SHEET ID
RGC
E-001

# LIGHTING GENERAL NOTES

1. THESE PLANS ARE INTENDED TO DEPICT THE LIGHT FIXTURE POLE LAYOUT, CIRCUITING REQUIREMENTS, PHOTOMETRIC REQUIREMENTS, AND OTHER GENERAL REQUIREMENTS FOR THE LIGHT FIXTURES TO BE USED.
2. THE INTENT OF THE LIGHTING DESIGN IS A PERFORMANCE SPECIFICATION, DESIGNED TO GIVE SPECIFIC REQUIREMENTS FOR THE PERFORMANCE OF THE LIGHT FIXTURES. REFERENCE SPECIFICATIONS FOR ALL REQUIREMENTS. ANY MANUFACTURER MEETING ALL REQUIREMENTS WILL BE CONSIDERED ACCEPTABLE.
3. THE LIGHT FIXTURES FOR GENERAL ENFORCEMENT ZONE ILLUMINATION MUST MEET THE FOLLOWING PHOTOMETRIC REQUIREMENTS WITHIN THE ENFORCEMENT ZONE, AT THE LIGHT POLE HEIGHTS AND SPACING INDICATED ON THE PLANS (IN ADDITION TO OTHER REQUIREMENTS ON THE PLANS AND SPECIFICATIONS):
   - AVERAGE OF 3 HORIZONTAL FOOTCANDLES AT GRADE ACROSS THE ENTIRE ENFORCEMENT ZONE BOUNDARY INDICATED ON THE PLANS, WHICH RANGES FROM 50-150 FEET FROM THE BORDER FENCE AS SHOWN ON THE PLANS.
   - -MAXIMUM TO MINIMUM FOOTCANDLE RATIO OF 20 TO 1 WITHIN THE ENFORCEMENT ZONE.
   - -LIGHT TRESPASS BEYOND THE ENFORCEMENT ZONE SHALL BE LIMITED TO 0.5 FOOTCANDLES, AND SHALL TAPER TO BELOW 0.1 FOOTCANDLES AT A MAXIMUM OF 75 FEET BEYOND THE ENFORCEMENT ZONE BOUNDARY.
4. THE LIGHT FIXTURES AT THE VEHICULAR GATES MUST MEET THE FOLLOWING PHOTOMETRIC REQUIREMENTS WITHIN THE GATE AREAS, AT THE MOUNTING HEIGHT AND LOCATIONS INDICATED ON THE PLANS (IN ADDITION TO OTHER REQUIREMENTS ON THE PLANS AND SPECIFICATIONS):
   - ILLUMINATE A PERIMETER OF 100 FEET BY 100 FEET, CENTERED ON THE MIDDLE OF THE GATE TO A MINIMUM OF 2 FOOT CANDLES AT THE GROUND LEVEL.

# MEDIA CONVERTER GENERAL NOTES

1. MEDIA CONVERTER SHALL BE CAPABLE OF (2) INDEPENDENT FIBER OPTIC INPUTS AND (1) PoE COPPER CABLING OUTPUT. MEDIA CONVERTER SHALL AUTOMATICALLY TRANSFER BETWEEN FIBER OPTIC INPUTS AS AVAILABLE.
2. MEDIA CONVERTERS SHALL BE POWERED UTILIZING STANDARD 110V ELECTRICAL OUTLET.

# GROUNDING GENERAL NOTES

1. FENCE GROUNDING, WHERE INDICATED ON THE PLANS, SHALL CONSIST OF 3/4" X 10' GROUND ROD PER SPECIFICATIONS, WITH THE TOP OF GROUND ROD A DRIVEN A MINIMUM OF 6" BELOW THE TOP OF FINISHED GRADE. CONNECT AND BOND #6 CONDUCTOR FROM GROUND ROD TO FENCE BOLLARD AT LOCATIONS INDICATED ON PLANS. ENSURE THAT BOLLARD FENCING IS ELECTRICALLY CONTINUOUS THROUGH EITHER WELDED PLATE OR CONCRETE ENCASED REINFORCING STEEL.
2. ALL GROUNDING SHALL BE IN STRICT COMPLIANCE WITH ARTICLE 250 OF THE 2017 NATIONAL ELECTRICAL CODE.

# TRANSFER SWITCH GENERAL NOTES

1. MANUAL TRANSFER SWITCHES LOCATED AT THE VEHICLE GATES AND UTILITY CONNECTION POWER DISTRIBUTION POINTS SHALL INCLUDE CAM-LOCK STYLE CONNECTORS FOR QUICK CONNECTION OF PORTABLE GENERATORS.

# CAMERA INFRASTRUCTURE NOTES

1. THE INTENT OF THIS PROJECT IS TO INCLUDE THE NECESSARY INFRASTRUCTURE FOR FUTURE SECURITY CAMERA CONNECTIONS AT LIGHT POLES ALONG THE ENFORCEMENT ZONE BOUNDARY. CAMERAS, CAMERA MOUNTS, AND COPPER CABLING TO THE POLE MOUNTED CAMERAS FROM THE CAMERA BOXES AT THE BASE OF THE LIGHT POLES WILL BE PROVIDED AND INSTALLED BY OTHERS AS PART OF A FUTURE PROJECT. THIS PROJECT INCLUDES ONLY THE CONDUIT INFRASTRUCTURE TO THE LIGHT POLES, THE CAMERA BOXES AS DETAILED AT EVERY 6TH LIGHT POLE, AND THE MEDIA CONVERTERS WITHIN THE CAMERA BOXES.

# MINI-POWER CENTER GENERAL NOTES

1. EACH MINI-POWER CENTER AS INDICATED ON THESE PLANS SHALL BE ENCLOSED IN A WEATHERPROOF NEMA 4X ENCLOSURE, AND SHALL STEP THE VOLTAGE DOWN FROM 480V TO 120/240V, SINGLE PHASE. EACH MINI-POWER CENTER SHALL HAVE A MINIMUM INTEGRATED 3KVA TRANSFORMER WITHIN THE ENCLOSURE, AS WELL AS TRANSFORMER PRIMARY CIRCUIT BREAKER AND (8) 20A/1P SECONDARY CIRCUIT BREAKERS, FOR 120V FEEDERS TO CAMERA MEDIA CONVERTER ENCLOSURES.

# GATE GENERAL NOTES

1. PROVIDE COMMUNICATIONS AND ELECTRICAL HANDHOLE AT EACH GATE.
2. PROVIDE COMMUNICATIONS, POWER, AND CONTROLS AT EACH GATE PER DRAWINGS E-503 AND E-603

# ELECTRICAL GENERAL NOTES

1. THESE PLANS ARE SCHEMATIC. THE CONTRACT DOCUMENTS CREATED BY THIS OFFICE ARE DIAGRAMMATIC AND SHOW THE INTENTION OF THIS PROJECT TO INSTALL NEW EQUIPMENT AND ASSOCIATED MATERIALS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
2. ALL ELECTRICAL WORK IS REQUIRED TO BE PERFORMED BY A CERTIFIED ELECTRICAL CONTRACTOR. ALL WIRING, EQUIPMENT, DEVICES AND INSTALLATIONS SHALL CONFORM TO ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES.
3. PROVIDE ALL WIRING, CONDUIT, LABOR AND MATERIALS NOT SHOWN ON PLAN, BUT NECESSARY FOR COMPLETE AND PROPER OPERATION OF THE ELECTRICAL SYSTEM.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES AND PERMITS AS NECESSARY TO COMPLETE THIS JOB. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO ENSURE A COMPLETE WORKING SYSTEM.
5. ALL ELECTRICAL WORK MUST COMPLY WITH THE REQUIREMENTS OF NFPA 70 (NATIONAL ELECTRICAL CODE), NFPA 70B, NFPA 70E, IECC, OSHA IN ADDITION TO OTHER REFERENCES REQUIRED BY CONTRACT.
6. INSTALLATION OF SWITCHES, OUTLETS AND CONTROL DEVICES SHALL COMPLY WITH LOCAL CODES AND STATE ADA REQUIREMENTS.
7. REFER TO CIVIL PLANS FOR EXACT LOCATIONS OF ALL EQUIPMENT.
8. ALL ELECTRICAL EQUIPMENT, DEVICES AND CIRCUITS SHALL CONTAIN A GROUNDING CONDUCTOR. CONDUIT SYSTEM SHALL NOT BE USED AS GROUNDING NETWORK. ALL GROUNDING SHALL BE IN STRICT COMPLIANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
9. COORDINATE LOCATION AND VERIFY REQUIREMENTS OF ALL EXTERIOR UTILITY EQUIPMENT AND METER BASE WITH OWNER AND UTILITY COMPANY. UTILITY PROVIDER FOR THE PROJECT IS A.E.P. CONTRACTOR RESPONSIBLE FOR PROVIDING UTILITY SERVICE PROVIDER WITH LOAD FORMS AND ALL INFORMATION REQUIRED FOR NEW SERVICE INSTALLATION PER UTILITY COMPANY STANDARDS. COORDINATE WITH UTILITY COMPANY FOR EXACT SERVICE POINT, POLE, AND TRANSFORMER LOCATIONS.
10. UTILITY SECONDARY TRENCH AND CONDUIT REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE UTILITY COMPANY SPECIFICATIONS. COORDINATE WITH UTILITY COMPANY. PROVIDE AND INSTALL ALL MATERIAL AND EQUIPMENT AS REQUIRED FOR COMPLETE JOB INSTALLATION.
11. ALL SWITCHBOARDS, PANELBOARDS, TRANSFORMERS, DISCONNECT SWITCHES AND OTHER ELECTRICAL DEVICES AND EQUIPMENT SHALL HAVE ENGRAVED NAMEPLATES INDICATING EQUIPMENT IDENTIFICATION TAG AND VOLTAGE, AS WELL AS WHERE DEVICE IS FED FROM. ALL SWITCHBOARDS AND PANELBOARDS SHALL HAVE TYPED DIRECTORIES INDICATING DISTRIBUTION AND BRANCH CIRCUIT FEEDERS.
12. CONTRACTOR IS RESPONSIBLE FOR NATIONAL ELECTRICAL CODE REQUIRED CLEARANCES AROUND AND ABOVE ALL ELECTRICAL EQUIPMENT AND DEVICES.
13. SHORT CIRCUIT AMPERE INTERRUPTING CAPACITY (A.I.C.) RATING OF ALL ELECTRICAL PRODUCTS SHALL BE GREATER THAN THE MAXIMUM AVAILABLE SHORT CIRCUIT CURRENT.
14. WIRE AND CONDUIT SIZES SHALL BE INSTALLED AND SIZED TO COMPENSATE FOR VOLTAGE DROP PER THE NATIONAL ELECTRICAL CODE.
15. ALL ELECTRICAL AND ELECTRONIC COMPONENTS EXPOSED TO WEATHER SHALL BE RATED AT NEMA 4X; INCLUDING, BUT NOT LIMITED TO: DISTRIBUTION PANELS, JUNCTION BOXES, RECEPTACLES, OUTLETS, PERIPHERALS, SENSORS, TRANSMITTERS, KEYPADS, AND THE FASTENERS USED/CONNECTIONS MADE THEREFORE.
16. ALL LIGHT POLE AND RVSS TOWER HAND HOLES AND ACCESS PANELS BELOW 20'-0" ABOVE GROUND SHALL EMPLOY PROPRIETARY GEOMETRY, HIGH LEVEL SECURITY, TAMPER-PROOF FASTENERS THAT WILL NOT PROMOTE DISSIMILAR METALS CORROSION.

# RVSS TOWER GROUNDING GENERAL NOTES

1. AS PART OF THE WORK, THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING AND INSTALLING A EARTH ELECTRODE SYSTEM (EES) AT THE BASE OF EACH OF THE RVSS TOWER LOCATIONS INDICATED ON THE PLANS. EES SHALL BE UTILIZED FOR FUTURE CONNECTION OF TOWER GROUNDING, TOWER LIGHTNING PROTECTION, ELECTRICAL/FIBER EQUIPMENT AND ENCLOSURE GROUNDING, FENCING / BOLLARDS, AND RVSS UPS EQUIPMENT GROUNDING. FINAL CONNECTIONS TO FUTURE OR OWNER PROVIDED EQUIPMENT NOT INDICATED TO BE INSTALLED ON THESE PLANS SHALL BE BY OTHERS.
2. ALL GROUNDING AT RVSS TOWERS SHALL CONFORM TO FAA-STD-019E AS A MINIMUM.
3. GROUNDING ELECTRODE SYSTEM SHALL BE USED FOR LIGHTNING PROTECTION OF THE FUTURE RVSS TOWER, AND AS SUCH, SYSTEM SHALL BE INSTALLED AND LABELED IN ACCORDANCE WITH ALL UL 96A AND NFPA 780 REQUIREMENTS.
4. SITE SURVEY: A SITE SURVEY SHALL BE CONDUCTED BY THE CONTRACTOR FOR BOTH RVSS SITES INDICATED ON THESE PLANS TO DETERMINE THE GEOLOGICAL AND OTHER PHYSICAL CHARACTERISTICS OF THE SURROUNDING EARTH. INFORMATION TO BE COLLECTED SHALL INCLUDE LOCATION OF ROCK FORMATIONS, GRAVEL DEPOSITS, SOIL TYPES ETC. PERFORM A SOIL RESISTIVITY TEST AT PROBE SPACINGS OF 10, 20, 30 AND 40 FEET IN FOUR DIRECTIONS FROM THE PROPOSED RVSS TOWER AND EQUIPMENT. ALL SURVEY DATA, INCLUDING SOIL RESISTIVITY MEASUREMENTS, SHALL BE NOTED ON A SCALED DRAWING OR SKETCH OF THE SITE AND SUBMITTED TO THE ENGINEER FOR REVIEW.
5. SHOP DRAWINGS: CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF THE PROPOSED EES TO THE ENGINEER FOR REVIEW AND APPROVAL, INDICATING LOCATIONS OF ALL GROUNDING ELECTRODES, GROUNDING CONDUCTORS, AND OTHER GROUNDING ACCESSORIES AS REQUIRED. THE EES SHALL CONSIST OF AT LEAST (4) DRIVEN GROUND RODS (CONFIGURATION AND DEPTH BASED ON SOIL TEST), SUPPLEMENTAL GROUNDING ELECTRODES (IF REQUIRED), AND BURIED INTERCONNECTING CONDUCTORS. THE SITE SURVEY INFORMATION SHALL BE USED AS THE BASIS FOR THE DESIGN OF THE EES. THE RESISTANCE TO EARTH OF THE EES SHALL BE NOT OVER 10 OHMS. WHERE CONDITIONS ARE ENCOUNTERED SUCH AS ROCK NEAR THE SURFACE, SHALLOW SOILS, PERMAFROST AND SOILS WITH LOW MOISTURE OR MINERAL CONTENT, A SUPPLEMENTAL GROUNDING ELECTRODE MAY BE REQUIRED TO BE USED.
6. SUPPLEMENTAL GROUNDING ELECTRODES: GROUND DISSIPATION PLATES MAY BE USED. IN SHALLOW SOIL LOCATIONS WITH LIMITED SURFACE SPACE, GROUND DISSIPATION PLATES SHALL BE ALLOWED IN PLACE OF GROUND RODS IN THE EARTH ELECTRODE SYSTEM (EES). THE PLATES SHALL BE INSTALLED AT THE CORNERS OF THE EES AT THE FARTHEST ACCESSIBLE POINT FROM THE RVSS TOWER. PLATES SHALL BE CONSTRUCTED OF A MINIMUM ONE QUARTER-INCH THICK COPPER AND BE A MINIMUM OF TWO FEET SQUARE. THESE PLATES SHOULD BE INSTALLED IN A VERTICAL PLANE TO TAKE ADVANTAGE OF SEASONAL MOISTURE AND TEMPERATURE CHANGES IN THE SOIL. INSTALL THE PLATES AT THE SAME DEPTH OR DEEPER THAN THE INTERCONNECTING CONDUCTOR, BUT MAINTAIN A MINIMUM OF ONE-FOOT OF NATIVE SOIL ABOVE THE UPPER EDGE OF THE PLATE. ATTACHMENT TO THE EES SHALL BE WITH A 4/0 AWG BARE STRANDED COPPER CONDUCTOR, EXOTHERMICALLY WELDED TO THE EES AND THE PLATE. THE ATTACHMENT POINT AT THE PLATE SHALL BE AT THE CENTER OF THE PLATE, NOT NEAR THE EDGE OR THE CORNERS. THEY SHALL BE CONFIGURED AS A JORDAN DISSIPATION PLATE DESIGN OR EQUAL.
7. INTERCONNECTIONS: GROUND RODS AND GROUNDING ELECTRODES OF THE EES SHALL BE INTERCONNECTED BY A BURIED, BARE, 4/0 AWG COPPER CONDUCTOR. THE CONDUCTOR SHALL BE BURIED AT 30" BELOW GRADE LEVEL. CONNECTIONS TO THE GROUNDING ELECTRODES SHALL BE EXOTHERMICALLY WELDED. THE INTERCONNECTING CONDUCTOR SHALL CLOSE ON ITSELF FORMING A COMPLETE LOOP WITH THE ENDS EXOTHERMICALLY WELDED. THE BONDING RESISTANCE OF ALL INTERCONNECTIONS SHALL BE ONE MILLIOHM OR LESS FOR EACH BOND WHEN MEASURED WITH A 4-TERMINAL MILLIOHM METER.
8. A MINIMUM OF ONE ACCESS WELL SHALL BE INSTALLED FOR THE EES. THE WELL SHOULD BE LOCATED AT A GROUND ROD THAT IS IN AN AREA WITH ACCESS TO THE OPEN SOIL SO THAT CHECKS OF THE EES CAN BE MADE ONCE THE FACILITY IS IN USE. THE ACCESS WELL SHALL BE MADE FROM CLAY PIPE, POURED CONCRETE, OR OTHER APPROVED WALL MATERIAL AND SHALL HAVE A REMOVABLE COVER. THE ACCESS WELL SHALL BE CONSTRUCTED TO PROVIDE A MINIMUM CLEARANCE (12 INCHES RADIUS) FROM THE CENTER OF THE GROUND ROD TO THE INSIDE WALL OF THE ACCESS WELL. THE ACCESS WELL SHALL HAVE AN OPENING OF A MINIMUM 12 INCH RADIUS. CONNECTIONS SHALL BE BY EXOTHERMIC WELDS.
9. CONTRACTOR SHALL STAKE OUT THE EXACT LOCATION OF THE BURIED GROUND LOOP CONDUCTOR IN THE FIELD AFTER INSTALLATION, SO THAT IT CAN BE TIED INTO WITH EQUIPMENT AND TOWER GROUND CONDUCTORS BY OTHERS WITH MINIMUM EXCAVATION.
10. GROUND RODS SHALL BE COPPER CLAD STEEL, MINIMUM 10 FEET IN LENGTH AND 3/4" IN DIAMETER. ROD CLADDING SHALL NOT BE LESS THAN 1/100" THICK. GROUND RODS SHALL BE AS WIDELY SPACED AS POSSIBLE, AND IN NO CASE SPACED LESS THAN ONE ROD LENGTH. TOPS OF GROUND RODS SHALL BE NOT LESS THAN 6 INCHES BELOW GRADE LEVEL.
11. GROUND LOOP CONDUCTOR TRENCH SHALL BE EXCAVATED TO 36" BELOW GRADE. CONDUCTOR SHALL BE INSTALLED AT 30" BELOW GRADE. BOTTOM 12" OF TRENCH SHALL BE BACKFILLED WITH BENTONITE/EARTH MIX BACKFILL. REMAINDER OF TRENCH SHALL BE BACKFILLED WITH COMPACTED BACKFILL.
12. CONTRACTOR SHALL PROVIDE AND INSTALL A 24" X 2" X 1/4" COPPER GROUND BAR ON THE INTERIOR WALL OF THE RVSS TOWER EQUIPMENT SHELTER, WITH ISOLATORS AND PRE-DRILLED GROUNDING HOLES. CONNECT GROUND BAR WITH 4/0 AWG GROUND CONDUCTOR TO GROUND LOOP. GROUND BAR SHALL BE USED FOR PANEL/TRANSFORMER/EQUIPMENT GROUNDING CONNECTIONS PER CODE REQUIREMENTS WITHIN EQUIPMENT SHELTER.
13. THE GROUNDING SYSTEM SHALL BE CONSTRUCTED IN ACCORDANCE WITH UL 96 AND NFPA 780 REQUIREMENTS. CERTIFICATION SHALL BE PERFORMED BY AN INDEPENDENT, THIRD-PARTY INSPECTION FIRM. THE INSPECTION FIRM CANNOT BE THE SYSTEM DESIGNER OR INSTALLER.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|

ISSUED DATE:
SOLICITATION NO:
CONTRACT NO.:
FILE NUMBER:

DESIGNED BY: M.J. HILL
DRAWN BY: D.A. NELSON
CHECKED BY:
SUBMITTED BY:
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

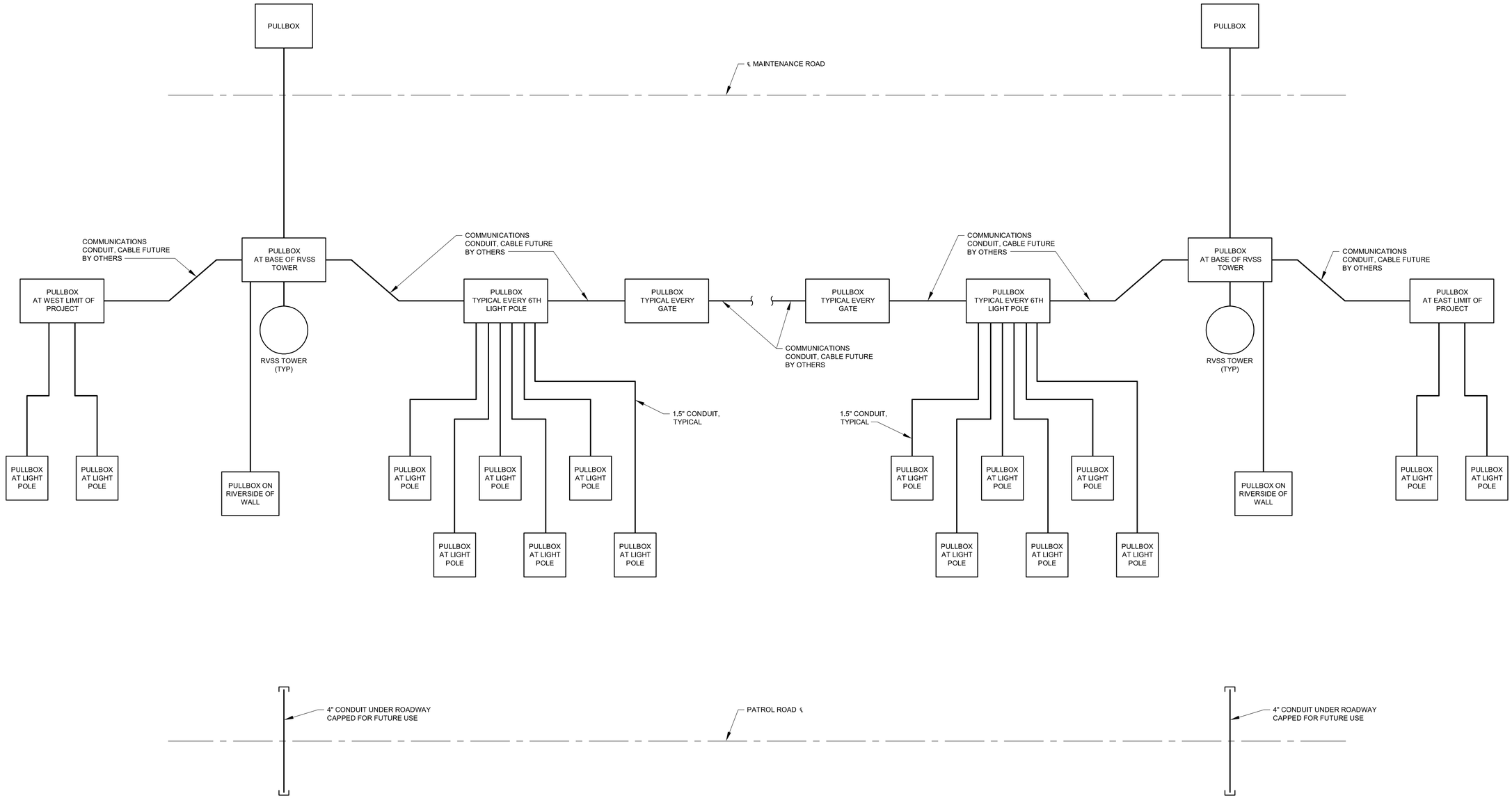
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

ROV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL AND COMMUNICATION NOTES

SHEET ID
RGC
E-002

NOTES:

1. DUCTBANK AND QUANTITY AND SIZE OF CONDUITS BY CONTRACTOR TO BE COORDINATED WITH OWNER.




# CONCEPTUAL OVERALL COMMUNICATIONS CONDUIT INFRASTRUCTURE

NO SCALE

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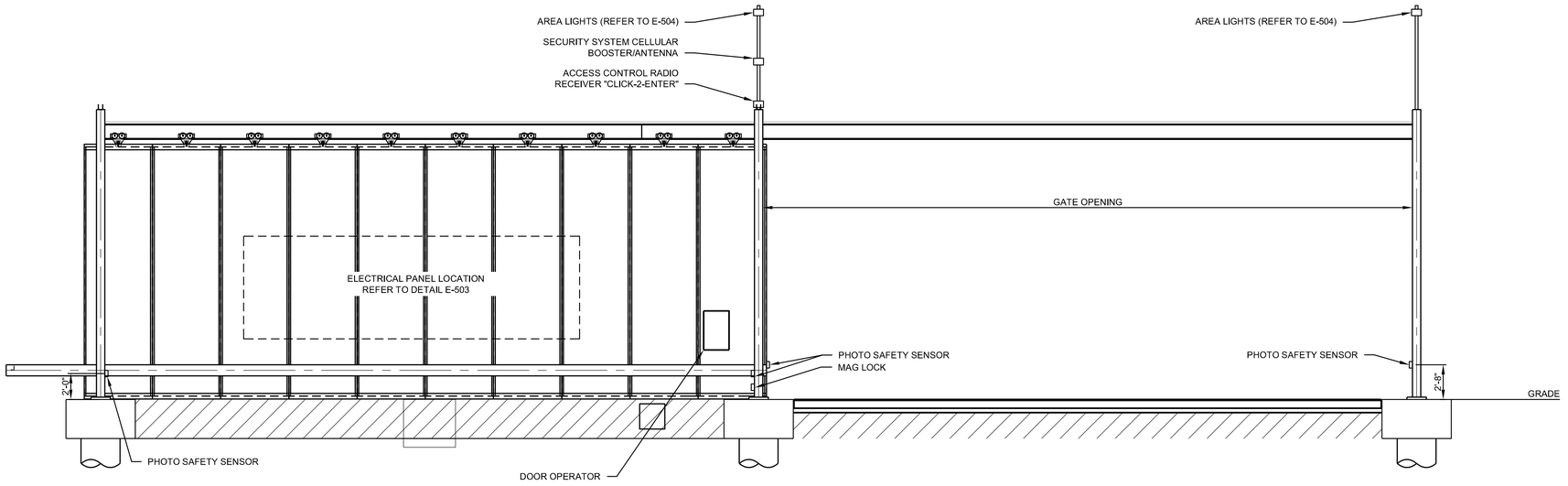
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

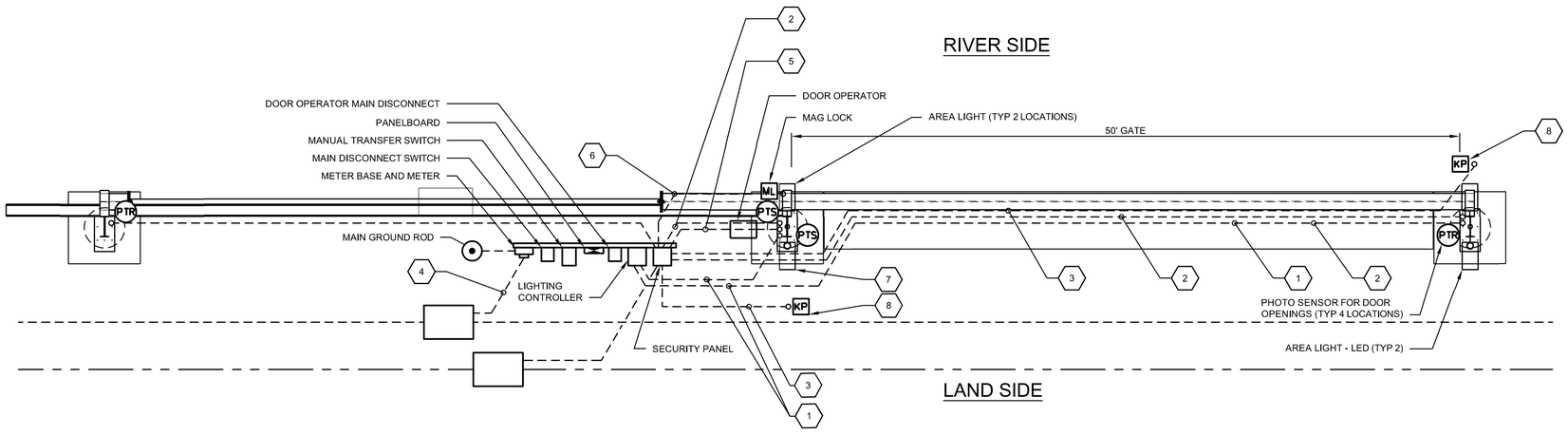
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
CONCEPTUAL OVERALL CAMERA CONDUIT INFRASTRUCTURE

SHEET ID
RGC
E-101




## GATE PHOTOELECTRIC BEAM DEVICES MOUNTING HEIGHTS

SCALE: 3/16" = 1'-0"




## GATE ELECTRICAL LAYOUT - RIGHT SIDE LAYOUT

SCALE: 3/16" = 1'-0"

AT FULL SIZE

0 1 2 3 IN

0 1 2 3 4 5 6 7 8 cm

## GENERAL NOTES

1. RATING OF THE MANUAL TRANSFER SWITCH'S TRANSFER PANEL "QUICK COUPLING" SHALL BE COORDINATED WITH THE SIZE OF THE ANTICIPATED MOBILE EMERGENCY GENERATOR.
2. KEYPADS MAY NEED TO BE RE-LOCATED TO REFLECT ACTUAL SITE CONDITIONS.
3. MAGLOCK SHALL BE PLACED UNDER GATE OPERATOR.
4. UNLESS NOTED OTHERWISE, RUN UNDERGROUND CONDUITS LOCATED ALONG AND IN THE VICINITY OF THE GATE OPENING UNDER THE 4' WIDE x 8" DEEP GATE OPENING CONCRETE SLAB.

## XX KEYED NOTES

1. POWER FOR AREA LIGHTS - 1" SCHEDULE 80 - TO LIGHTING CONTACTOR.
2. CONDUIT FOR PHOTO SAFETY SENSOR - 1" SCHEDULE 80 - TO SECURITY.
3. CONDUIT FOR SECURITY KEYPAD - 1" SCHEDULE 80.
4. CONDUIT FOR CONNECTION TO RGV-06 POWER DUCTBANK SCHEDULE 80.
5. CONDUIT FOR "CLICK-TO-ENTER" AND CELLULAR ANTENNA SYSTEM - 1" SCHEDULE 80.
6. CONDUIT FOR MAGNETIC LOCK - 1" SCHEDULE 80.
7. FIXTURE IDENTIFIED SHALL BE CONNECTED TO BATTERY CIRCUIT. SEE DETAIL E-605.
8. PROVIDE GOOSENECK MOUNTING ARM AND CONCRETE BASE FOR MOUNTING OF KEYPAD. SEE CIVIL PLANS FOR EXACT LOCATION OF KEYPADS.

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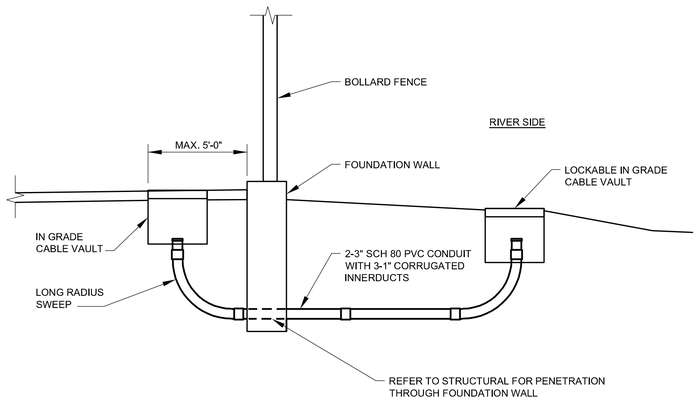
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL SINGLE GATE - PLAN VIEW
50 FEET SINGLE LEAF AUTOMATED GATE

SHEET ID
RGC
E-102



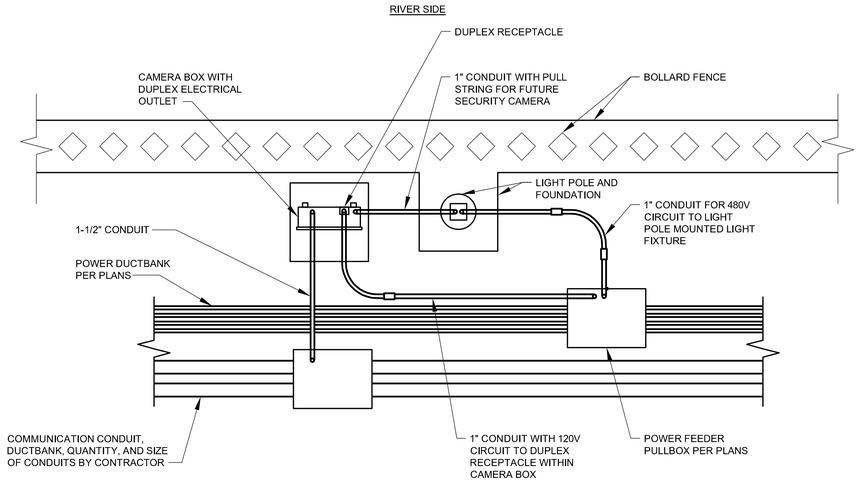

## SECTION

NOTES:

1. IN ADDITION TO PENETRATIONS FOR RVSS TOWERS PROVIDE AT BEGINNING AND END OF EACH CONTRACT WALL SEGMENT FOR FUTURE CONNECTIONS.

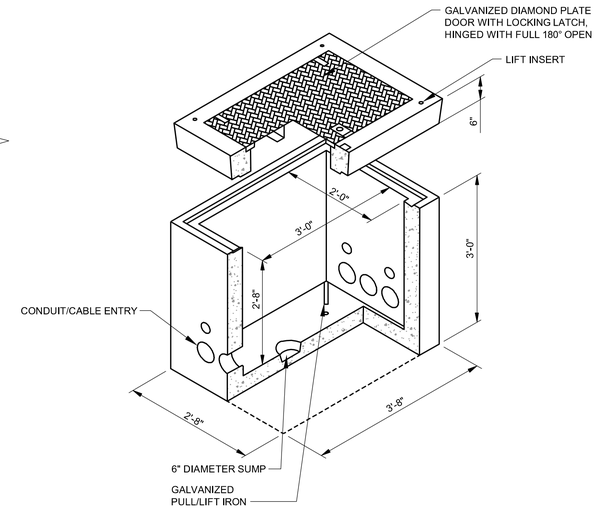
## COMMUNICATIONS CONDUIT ROUTING TO RIVERSIDE

NO SCALE



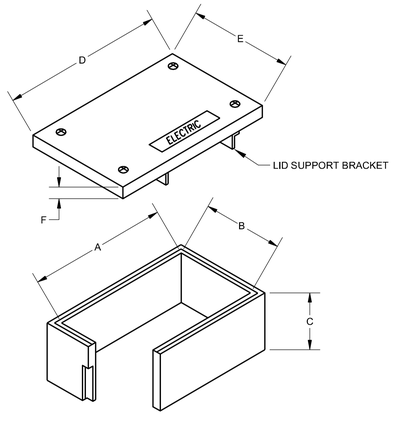

## TYPICAL PLAN VIEW AT LIGHT POLES

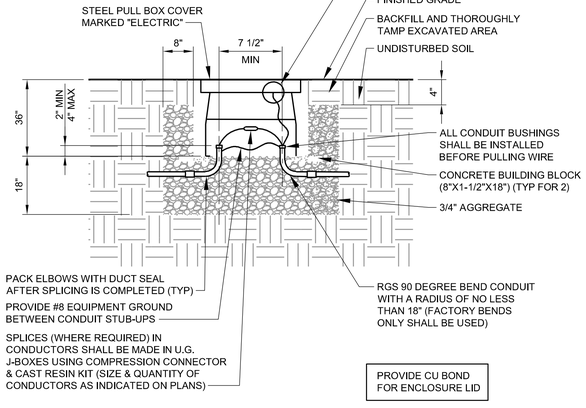
NO SCALE




## UNDERGROUND COMMUNICATION CABLE VAULT DETAIL (RIVER SIDE)

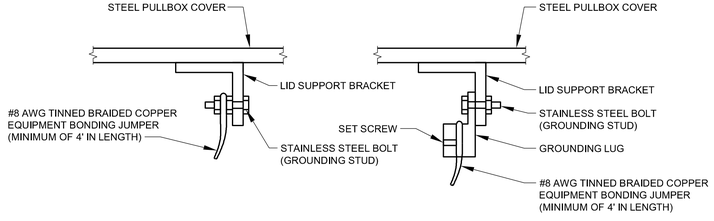
NO SCALE




NOTES:

1. INSTALL A 1/4"-20 NC X 3/4" STAINLESS STEEL GROUNDING STUD TO THE LID SUPPORT MEMBER(S) ON THE BOTTOM OF LID BY DRILLING A HOLE THROUGH THE "L", "C", OR "T"-SHAPED SUPPORT MEMBER. SECURE GROUNDING STUD AND BONDING JUMPER WITH TWO (2) STAINLESS STEEL NUTS AND FLAT WASHERS.
2. SECURE GROUNDING LUG TO THE LID SUPPORT MEMBERS TO THE BOTTOM OF LID BY DRILLING A HOLE THROUGH THE "L", "C", OR "T"-SHAPED SUPPORT MEMBER AND INSTALLING A 1/4"-20 NC X 3/4" STAINLESS STEEL GROUND STUD. INSERT BONDING JUMPER INTO GROUNDING LUG AND SECURE WITH SET SCREW.




## TYPICAL HANDHOLE / PULL BOX DETAIL (COMM AND POWER, SECURE SIDE)

NO SCALE

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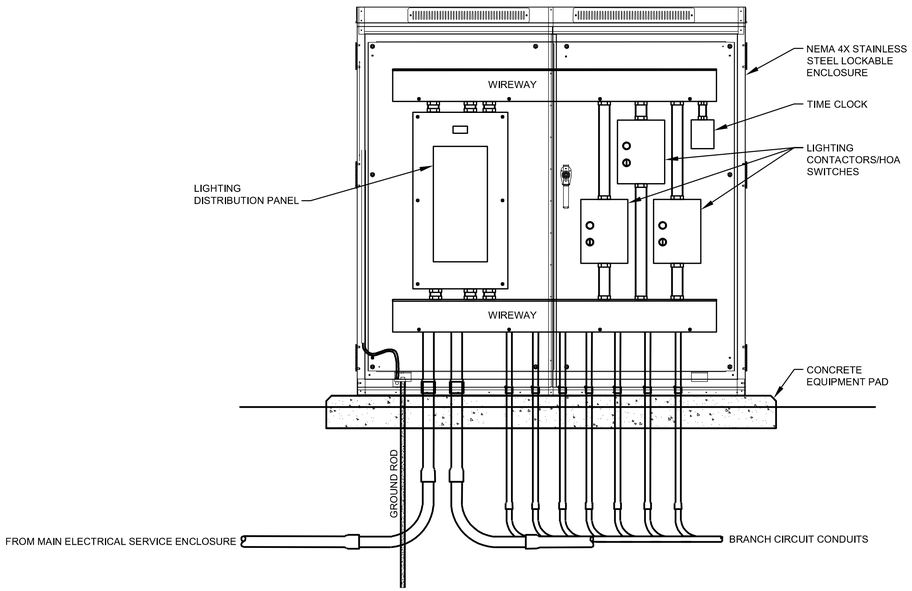
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

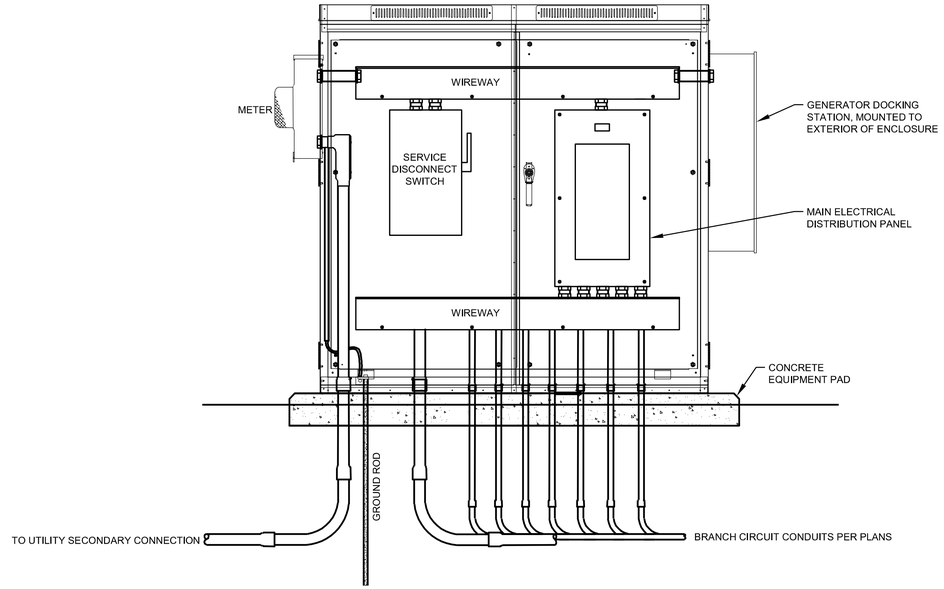
RGV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
CONDUIT ROUTING DETAILS

SHEET ID
RGC
E-501



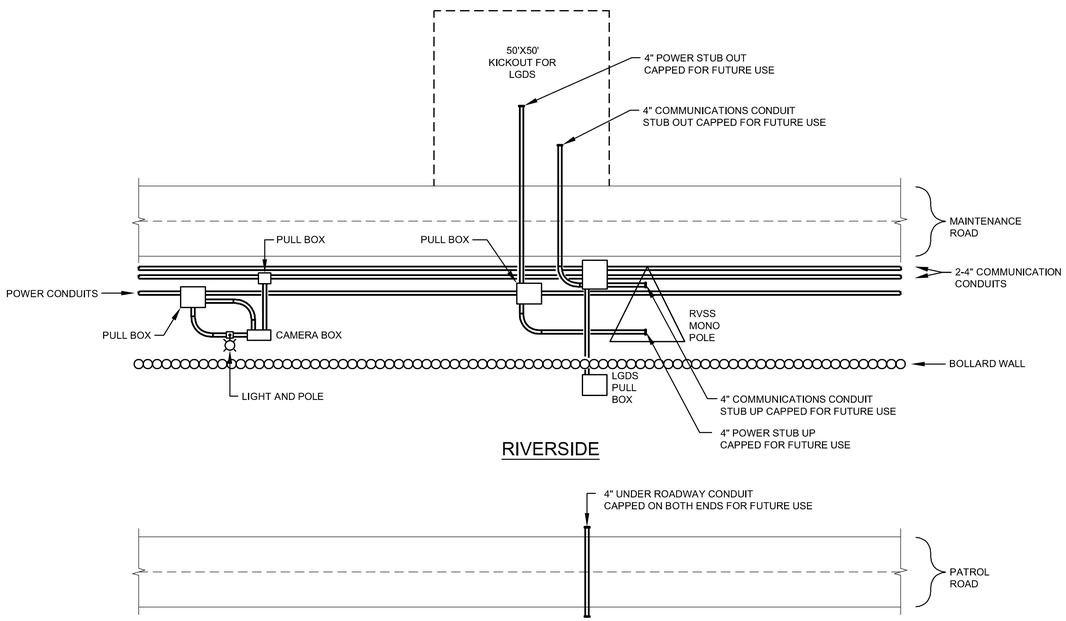

## TYPICAL LIGHTING DISTRIBUTION ENCLOSURE

NOT TO SCALE




## TYPICAL UTILITY CONNECTION POINT ELECTRICAL SERVICE ENCLOSURE

NOT TO SCALE




## RVSS TOWER TYPICAL PLAN VIEW

NOT TO SCALE

US Army Corps of Engineers ®

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|---|---|---|
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US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
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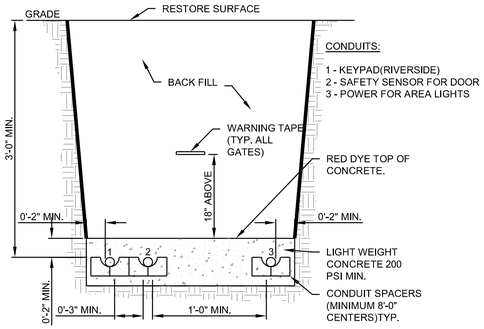
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

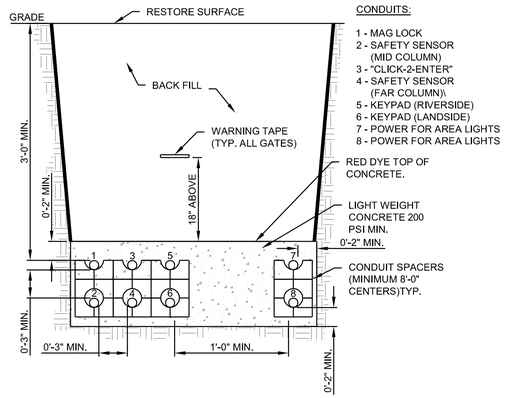
RGV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
RVSS TOWER YARD EQUIPMENT DETAILS

SHEET ID
RGC
E-502



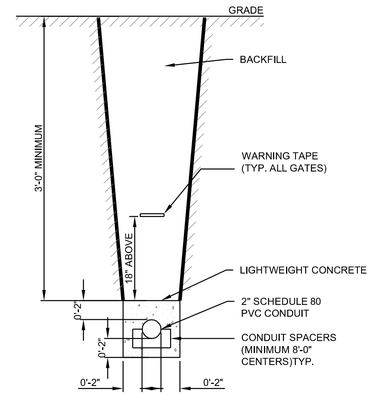

## GATE POWER, SECURITY, AND CONTROLS DUCT BANK SECTION

NO SCALE



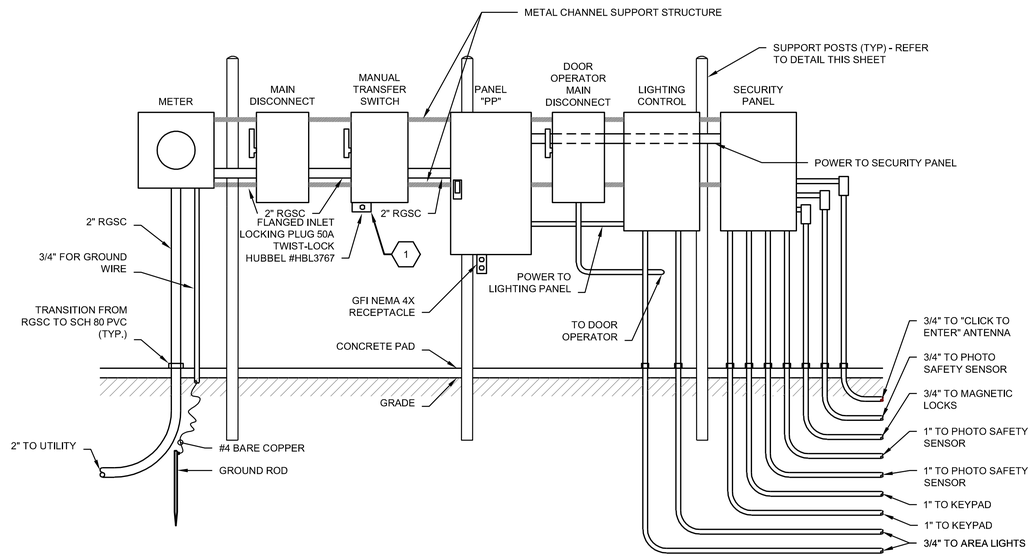

## GATE POWER, SECURITY, AND CONTROLS DUCT BANK SECTION

NO SCALE



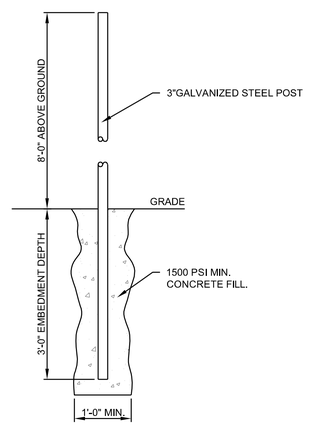

## ELECTRICAL SERVICE DUCT BANK

NO SCALE




## GATE POWER, SECURITY, AND CONTROLS PANEL ELEVATION DETAIL

NO SCALE




## MOUNTING POLE DETAIL

NO SCALE

## GENERAL NOTES

1. PROVIDE SUPPORT POSTS AND UNISTRUT MOUNTING RAILS AS REQUIRED. ALL STRUCTURE, CLAMPS AND ACCESSORIES SHALL BE CORROSION RESISTANT.
2. ALL BELOW GRADE CONDUIT SHALL BE SCHEDULE 80 PVC.
3. ALL ABOVE GRADE CONDUIT SHALL BE RIGID GALVANIZED STEEL CONDUIT.
4. ALL HARDWARE SHALL BE STAINLESS STEEL, WHERE POSSIBLE.
5. UNDERGROUND CONDUITS SHALL BE CONTINUOUSLY MARKED WITH FOIL-BACKED ELECTRICAL WARNING TAPE "CAUTION - ELECTRICAL LINE BURIED BELOW" WARNING TAPE SHALL BE INSERTED 18" ABOVE THE CENTER OF THE TOP OF THE CONDUITS.
6. WHERE ELECTRICAL EQUIPMENT IS EXPOSED TO THE ENVIRONMENT PROVIDE NEMA 4X ENCLOSURES. PROVIDE WEATHERPROOF ENCLOSURES FOR RECEPTACLES.

## KEYED NOTES

1. THE FLANGED INLET LOCKING PLUG SHALL BE INSTALLED WITH A GASKET BETWEEN THE PLUG AND THE ENCLOSURE

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|
| | | |

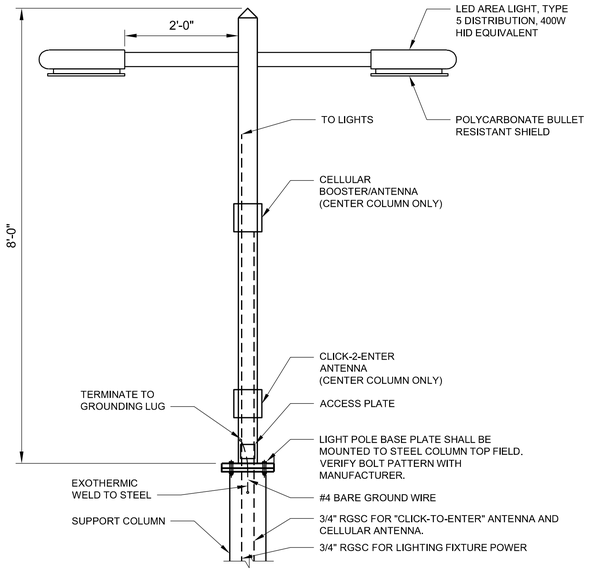
DESIGNED BY: M.J. HILL
DRAWN BY: D.A. NELSON
CHECKED BY:
ISSUED DATE:
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
SUBMITTED BY:
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

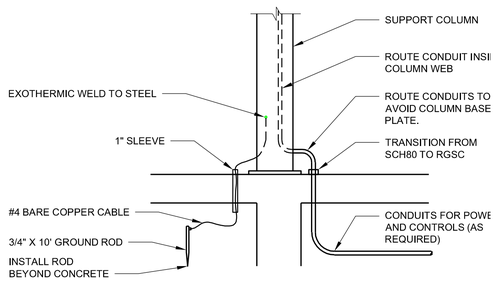
RGV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL DETAILS - SHEET 1
50 FEET SINGLE LEAF AUTOMATED GATE

SHEET ID
RGC
E-503



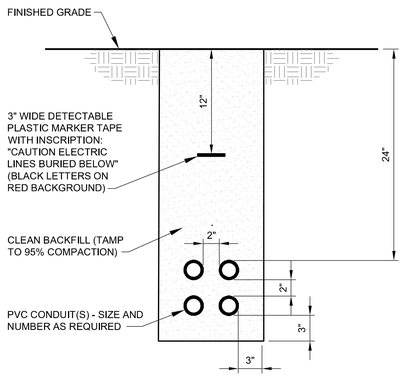

## GATE LIGHT POLE DETAIL

NO SCALE



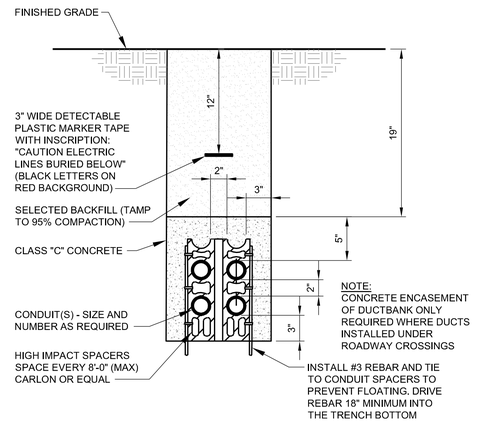

## GATE POLE DETAIL AT COLUMN BASE

NO SCALE



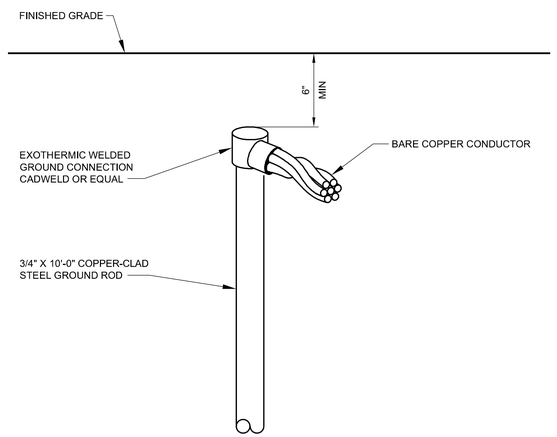

## TYPICAL DIRECT BURIED DUCTBANK DETAIL

NO SCALE



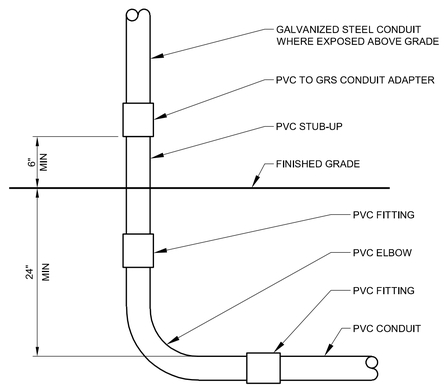

## TYPICAL CONCRETE ENCASED DUCTBANK DETAIL

NO SCALE




## TYPICAL GROUND ROD DETAIL

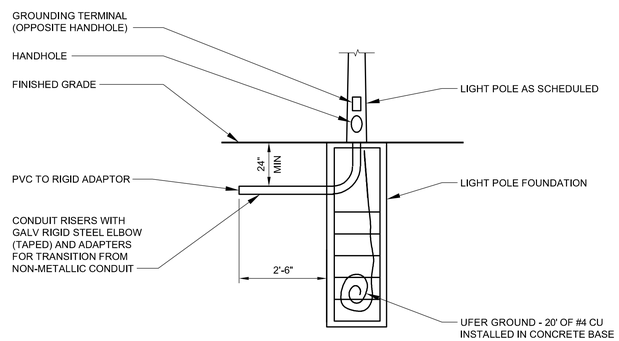
NO SCALE




NOTE:
WHERE CONDUITS ARE RUN IN SLAB, THE 24" DIMENSION DOES NOT APPLY.

## TYPICAL CONDUIT STUB-UP DETAIL

NO SCALE




## TYPICAL LIGHT POLE GROUNDING DETAIL

NO SCALE

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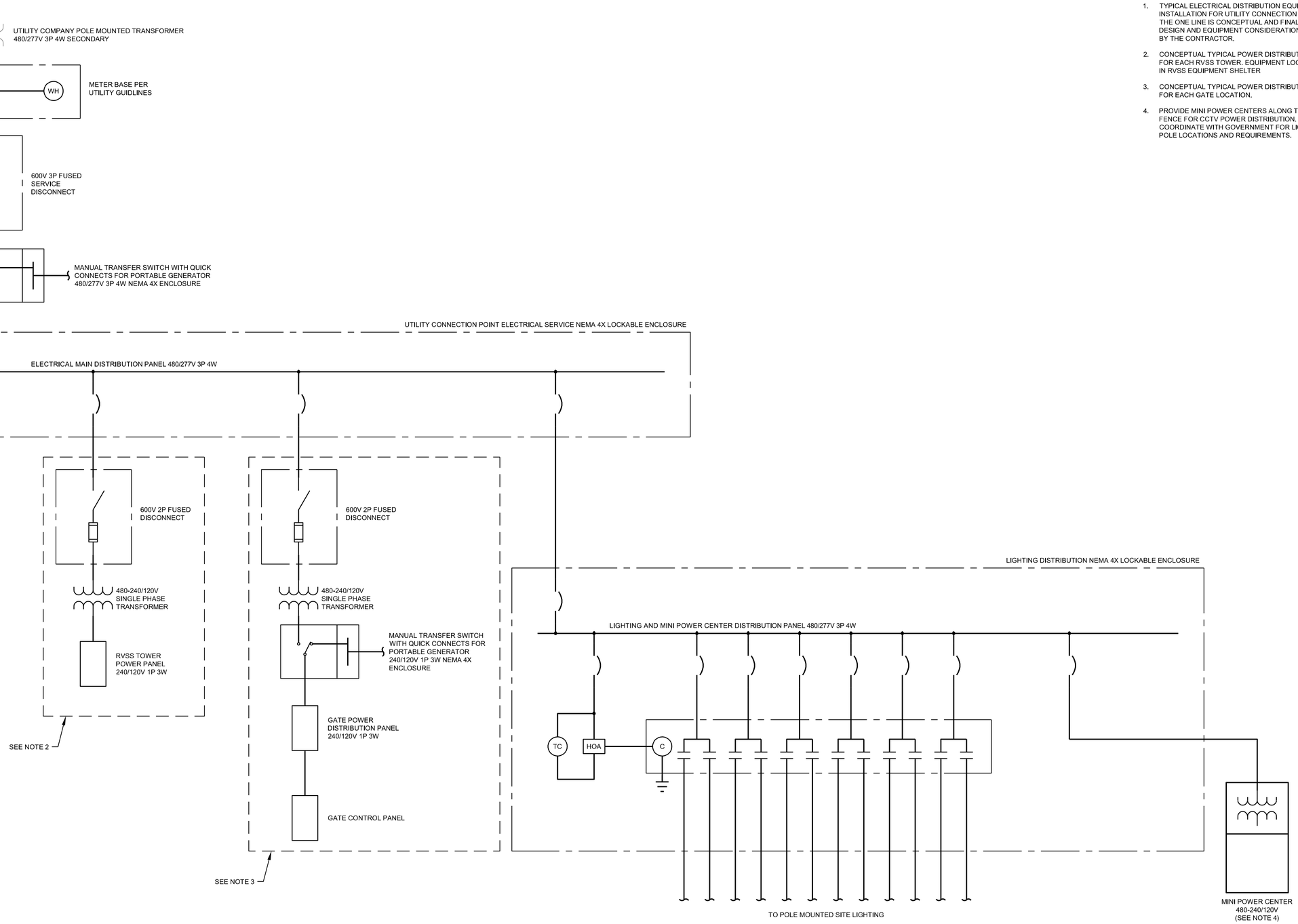
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL DETAILS - SHEET 2
50 FEET SINGLE LEAF AUTOMATED GATE

SHEET ID
RGC
E-504




NOTES:

1. TYPICAL ELECTRICAL DISTRIBUTION EQUIPMENT INSTALLATION FOR UTILITY CONNECTION POINT. THE ONE LINE IS CONCEPTUAL AND FINAL DESIGN AND EQUIPMENT CONSIDERATIONS ARE BY THE CONTRACTOR.
2. CONCEPTUAL TYPICAL POWER DISTRIBUTION FOR EACH RVSS TOWER. EQUIPMENT LOCATED IN RVSS EQUIPMENT SHELTER
3. CONCEPTUAL TYPICAL POWER DISTRIBUTION FOR EACH GATE LOCATION.
4. PROVIDE MINI POWER CENTERS ALONG THE FENCE FOR CCTV POWER DISTRIBUTION. COORDINATE WITH GOVERNMENT FOR LIGHT POLE LOCATIONS AND REQUIREMENTS.

# CONCEPTUAL UTILITY SERVICE POINT ELECTRICAL ONE-LINE DIAGRAM

NO SCALE

US Army Corps of Engineers ®

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GALVESTON DISTRICT
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GALVESTON, TX 77553-1229

ETEGRA
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DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT, RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
CONCEPTUAL ONE-LINE DIAGRAM

SHEET ID
RGC
E-601

## Panel: PP

Location:
Supply From: MTS
Mounting: Surface
Enclosure: NEMA 4X

Volts: 240/120V
Phases: 1 P
Wires: 3 Wire

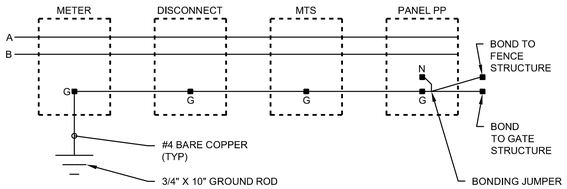
A.I.C Rating: 10,000
Mains Type: MCB
Mains Rating: 200A
MCB Rating: 200A

| CKT | Circuit Description | Trip | Poles | A | | B | | Poles | Trip | Circuit Description | CKT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | DOOR OPTR (7.5HP) | 70A | 2P | 2460 | 0 | | | 2P | 20A | SURGE SUPPRESSOR | 2 |
| 3 | - | - | - | | | 2460 | 0 | - | - | - | 4 |
| 5 | GFCI OUTLETS | 20A | 1P | 180 | 400 | | | 1P | 20A | SECURITY PANEL | 6 |
| 7 | LIGHTS | 20A | 1P | | | 723 | 1000 | 1P | 20A | SECURITY PANEL | 8 |
| 9 | LIGHTS | 20A | 1P | 241 | - | | | 1P | 20A | Spare | 10 |
| 11 | Spare | 20A | 1P | | | - | - | 1P | 20A | Spare | 12 |
| 13 | Spare | 20A | 1P | - | - | | | 1P | 20A | Spare | 14 |
| 15 | Spare | 20A | 1P | | | - | - | 1P | 20A | Spare | 16 |
| 17 | Spare | 20A | 1P | | | | | 1P | 20A | Spare | 18 |
| 19 | Spare | 20A | 1P | | | - | - | 1P | 20A | Spare | 20 |
| 21 | Spare | 20A | 1P | - | - | | | 1P | 20A | Spare | 22 |
| 23 | Spare | 20A | 1P | | | - | - | 1P | 20A | Spare | 24 |
| | | | Total Load: | 3281 | VA | 4183 | VA | | | | |
| | | | Total Amps: | 27.3 | Amps | 34.9 | Amps | | | | |

| Load Classification | Connected Load | Demand Factor | Estimated Demand | Panel Totals |
|---|---|---|---|---|
| Power | 1303 | 100% | 1303 | Total Conn. Load (VA): 7187 |
| Lighting | 964 | 125% | 1205 | Total Est. Demand (VA): 7428 |
| Motor/HVAC | 4920 | 100% | 4920 | Total Amps: 31.0 |
| | | | | |

## GATE ELECTRICAL PANEL SCHEDULE

NO SCALE




## GATE GROUNDING DETAIL

NO SCALE

| LUMINAIRE SCHEDULE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TYPE | GENERAL DESCRIPTION | LIGHT SOURCE DATA | | | | DRIVER/BALLAST | | POWER DATA | | |
| | | LAMP TYPE | QTY x WATTS/LAMP | LAMP CODE/LED MODULE | LED DELIVERED LUMENS | CONTROL TYPE | DIMMING | SUPPLY VOLT | WATTS PER FIXT. | NOTES |
| | POLE MOUNTED LIGHT FIXTURE, 27FT POLE. REFERENCE SPECIFICATIONS FOR REQUIREMENTS FOR POLE, FIXTURE, AND ACCESSORIES | LED | BY CONTRACTOR | FURNISHED WITH FIXTURE | BY CONTRACTOR | NA | 0-10V | 480V | 1200W MAX | |

## SITE LUMINAIRE SCHEDULE

NO SCALE

## GENERAL NOTES

1. ALL ELECTRICAL EQUIPMENT SHALL BE RATED NEMA 4X
2. ALL ELECTRICAL EQUIPMENT SHALL BE RATED FOR 10KAIC MINIMUM.
3. ALL CONDUCTORS SHALL BE #12 AWG UNLESS NOTED OTHERWISE

## CALCULATIONS

ASSUMPTIONS:

TRANSFORMER SIZE: 25kVA
IMPEDANCE: 1.58 Z (ESTIMATED)
UPSTREAM BUS CAPACITY: INFINATE
DISTANCE FROM TRANSFORMER: 50FT

SHORT CIRCUIT CURRENT:

IFL = (XFMR SIZE x 1000) / (VOLTAGE(LINE-LINE))

IFL = (25 x 1000) / (240) = 104.16A

IsC = IFL / %Z

IsC = (104.16A) / (.0158) = 6592 AMPS MAX

M = 1 / (1+F)

F = (2x(DISTANCE) x IsC) / ((CONSTANT) x (VOLTAGE))

F = (2 x 50FT x 6592A) / (13923 x 240) = 0.1972

M = 1 / (1 + 0.1972) = .8352

IsC(actual) = (6592 x 0.8352) = 5506A

PANEL BOARD MINIMUM
AIC = 10K AIC

## ABBREVIATIONS

M = MULTIPLIER
F = FACTOR
IsC = SHORT CIRCUIT CURRENT

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DESCRIPTION | DATE | MARK

ISSUED DATE:
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
DESIGNED BY: M.J. HILL
DRAWN BY: D.A. NELSON
CHECKED BY:
SUBMITTED BY:
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

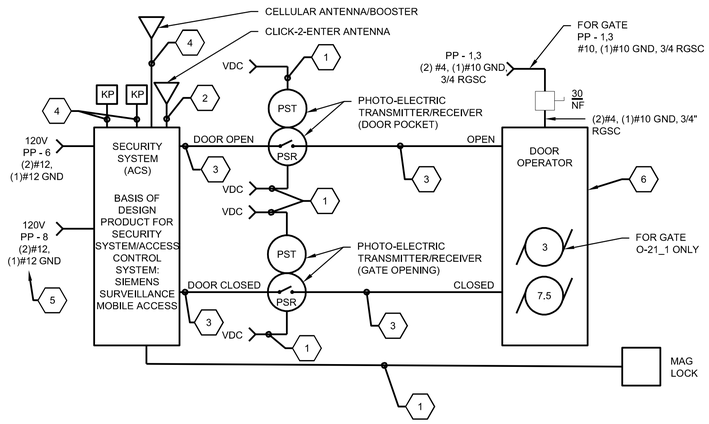
RGV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL SCHEDULES & DIAGRAMS
50 FEET SINGLE LEAF AUTOMATED GATE

SHEET ID
RGC
E-602

| LUMINAIRE SCHEDULE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TYPE | GENERAL DESCRIPTION | LIGHT SOURCE DATA | | | | DRIVER/BALLAST | | POWER DATA | | | |
| | | LAMP TYPE | QTY x WATTS/LAMP | LAMP CODE/LED MODULE | LED DELIVERED LUMENS | CONTROL TYPE | DIMMING | SUPPLY VOLT | WATTS PER FIXT. | MANUFACTURER AND CATALOG NUMBER SERIES | NOTES |
| A | DSX1 LED P9 50K T5W MVOLT (LITHONIA LIGHTING) | LED | NA | FURNISHED WITH FIXTURE | 28805 | NA | 0-10V | 120V | 241 | DSX1 LED P9 50K T5W MVOLT (LITHONIA LIGHTING) | |

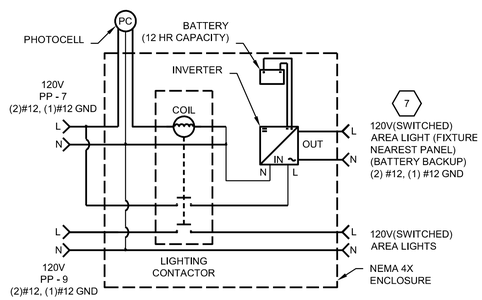
## GATE LUMINAIRE SCHEDULE

NO SCALE




## GATE CONTROL DIAGRAM

NO SCALE




## GATE LIGHTING CONTACTOR DIAGRAM

NO SCALE

## SHEET NOTES

1. 2 #12 (POWER) FROM SECURITY PANEL
2. 2 #12 (POWER) + 2 #16 (DOOR OPEN SIGNAL)
3. 2 #16 (CONTROL)
4. SPECIALITY CABLE PER MANUFACTURER
5. POWER FOR CELLULAR ANTENNA BOOSTER. EXTEND CONDUCTORS/CONDUIT TO DEVICE LOCATION.
6. BASIS OF DESIGN PRODUCT FOR DOOR OPERATOR IS: DOOR KING 9575 W/ HEAVY DUTY HOUSING OPTION.
7. CONNECT TO ONE FIXTURE NEAREST TO PANELS (LANDSIDE)

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|
| | | |

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SOLICITATION NO.:
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FILE NUMBER:

DESIGNED BY: M.J. HILL
DRAWN BY: D.A. NELSON
CHECKED BY:
SUBMITTED BY:
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BARRIER FENCE

ELECTRICAL CONTROL SCHEMATIC
50 FT. SINGLE LEAF AUTOMATED GATE

SHEET ID
RGC
E-603

US Army Corps
of Engineers ®
GALVESTON DISTRICT

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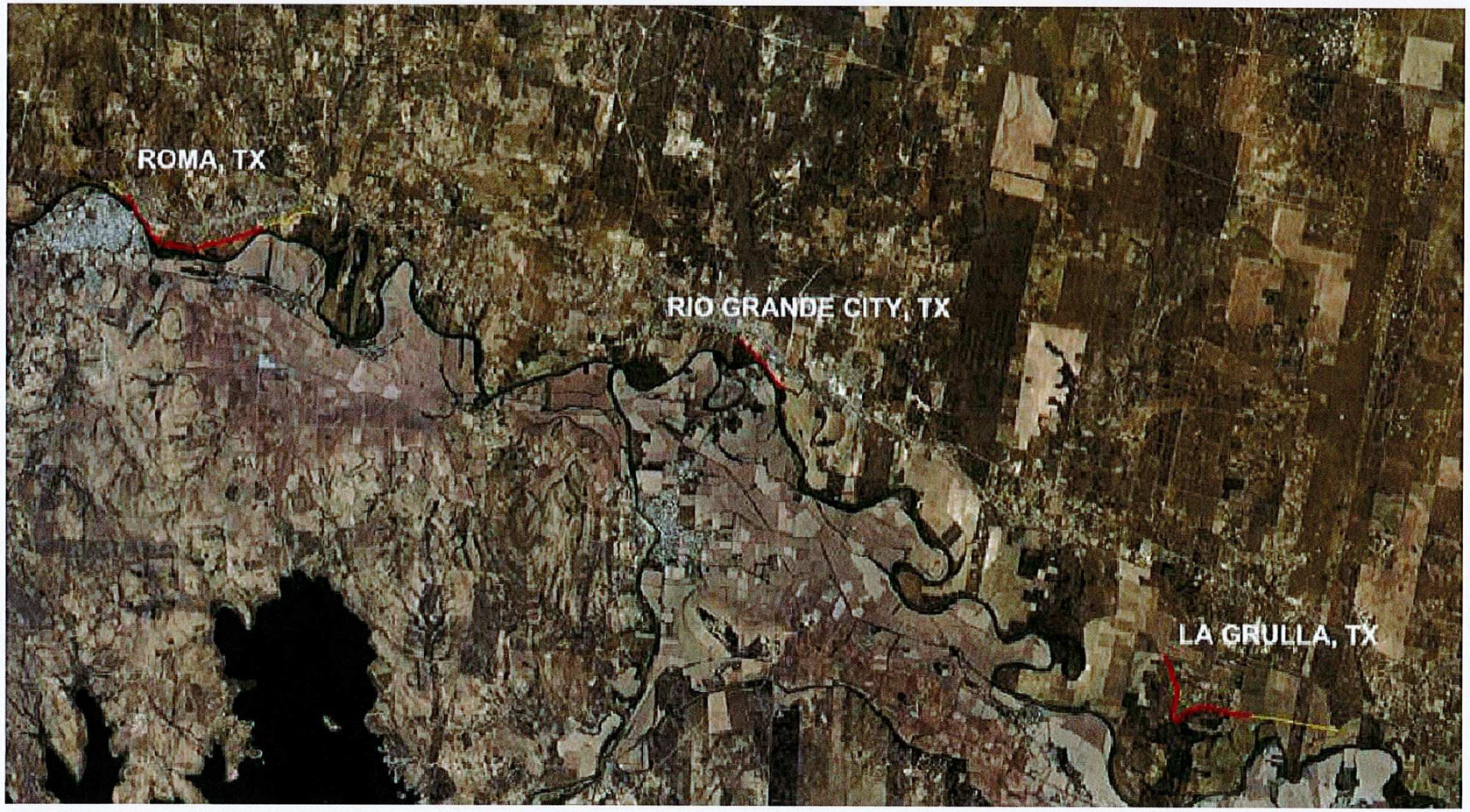
# RGV 06 - BORDER INFRASTRUCTURE CONSTRUCTION PROJECT
# RIO GRANDE VALLEY (RGV) CONSTRUCTION OF BOLLARD FENCE




SOLICITATION NO.:

LA GRULLA, TEXAS

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|

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SOLICITATION NO:
CONTRACT NO.:
FILE NUMBER:

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GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD, SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PROJECT LOCATION

SHEET ID
LA GRULLA
G-000

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GALVESTON DISTRICT

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Dallas, Texas 75252
p: 469-850-0327
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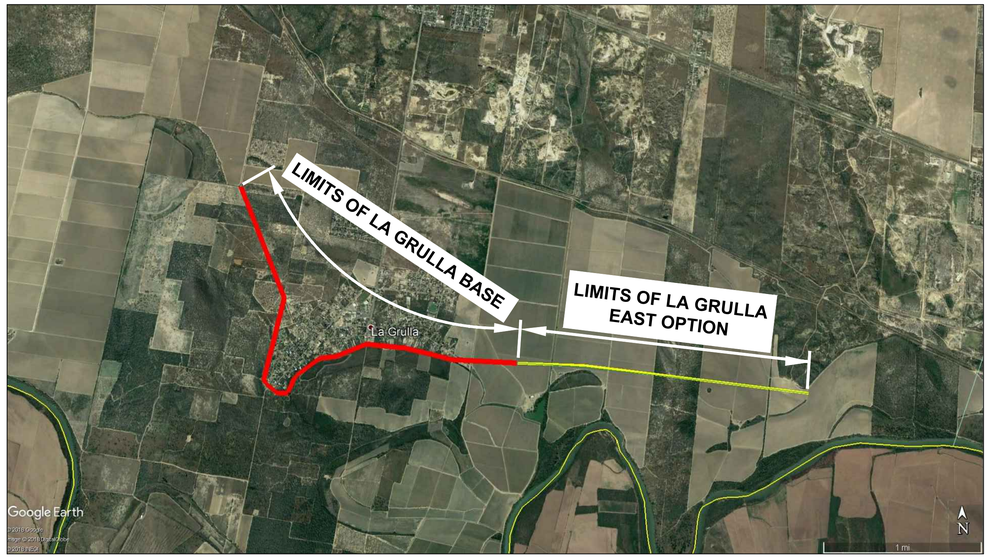
# RGV 06 - BORDER INFRASTRUCTURE CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV) CONSTRUCTION OF BOLLARD FENCE LA GRULLA BASE AND EAST OPTION




LA GRULLA, TEXAS

NORTH

SOLICITATION NO.:
CONTRACT NO.:
ISSUE DATE:

## INDEX



US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|

DESIGNED BY: A.PONCHAI
DRAWN BY: A.PONCHAI
CHECKED BY: B.PRESTON
SUBMITTED BY: B.PRESTON
SIZE: ANSI D

ISSUED DATE:
SOLICITATION NO:
CONTRACT NO.:
FILE NUMBER:

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
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DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV) CONSTRUCTION OF BOLLARD FENCE

COVER SHEET

SHEET ID
LAGRULLA
G-001

# ABBREVIATIONS

| | |
|---|---|
| C | TOTAL CENTRAL ANGLE |
| Ø | CURVE CENTRAL ANGLE DIAMETER |
| S | CENTRAL ANGLE |
| ABUT | ABUTMENT |
| ADT | AVERAGE DAILY TRAFFIC |
| AH | AHEAD |
| APPR. | APPROACH |
| ASTM | AMERICAN SOCIETY FOR TESTING AND MATERIALS |
| APPROX | APPROXIMATELY |
| BF | BACK FACE |
| BK | BACK |
| BM | BENCH MARK |
| BP | BALANCE POINT |
| BR. | BRIDGE |
| BRG. | BEARING |
| CC OR C. TO C | CENTER TO CENTERLINE |
| CLR | CLEAR |
| CMP | CORRUGATED METAL PIPE |
| COL | COLUMN |
| CONC. | CONCRETE |
| CONN | CONNECTION |
| CONST.JT OR CJ | CONSTRUCTION JOINT |
| CONST. | CONSTRUCTION |
| CONT. | CONTINUATION |
| CONT. | CONTINUOS |
| CS | POINT OF CURVE TO SPIRAL |
| CSA | CEMENT-STABILIZED AGGREGATE |
| CTRS. | CENTERS |
| CUFT | CUBIC FOOT (FEET) |
| CULU | CULVERT |
| CY,CUYD | CUBIC YARD (S) |
| D | DEPTH |
| DIA | DIAMETER |
| DHV | DESIGN HOURLY VOLUME |
| DIAG | DIAGONAL |
| DIAPH. | DIAPHRAGM |
| DIST | DISTANCE |
| DRWG(S) | DRAWING(S) |
| E | EAST |
| e | SUPERELEVATION RATE ENVIRONMENTAL ASSESSMENT |
| EA | EACH |
| EG | EXISTING GROUND |
| EL.94.16FT | ELEVATION W ITH NUMBER |
| ELEV. | ELEVATION |
| EMB. | EMBANKMENT |
| EP | EDGE OF PAVEMENT |
| E/P | EDGE OF PAVEMENT |
| EQ OR EQ. | EQUATION OR EQUAL |
| ER | EDGE OF ROAD |
| E/S | EDGE OF SHOULDER |
| EW | EDGE OF WATER |
| EX | EXISTING |
| EXC. | EXCAVATION |
| EXP. JT. | EXPANSION JOINT |
| FIN. | FINISH |
| FF | FRONT FACE |
| FLG. | FLANGE |
| FT | FEET/FOOT |
| FT2. | SQUARE FOOT |
| FT3 | CUBIC FOOT (FEET) |
| FTG. | FOOTING |
| GA | GAGE (GAUGE) |
| GALV. | GALVANIZED |
| H | HEIGHT |
| HDWL. | HEADWALL |
| HEX | HEXAGON |
| HORZ | HORIZONTAL |
| HW | HIGH WATER |
| ID | INSIDE DIAMETER |
| IN | INCH.INCHES |
| INFO | INFORMATION |
| JT | JOINT |
| L | LENGTH, LENGTH OF CURVE |
| LAM | LAMINATION |
| LAT. | LATITUDE |
| LBS | POUNDS |
| LNFT | LINEAR FOOT (FEET) |
| LONG. | LONGITUDINAL |
| L.P. | LOW POINT |
| LPSM | LUMP SUM |
| LS | LENGTH OF SPIRAL |
| LT.OR.LT | LEFT |
| LW | LOW WATER |
| LWC | LOW WATER CROSSING |
| M.L. | MAIN LINE |
| M.P. | MILE POST |
| MATL. | MATERIAL |
| MAX. | MAXIMUM |
| MEG. | MATCH EXISTING GRADE |
| MGAL | THOUSAND GALLON |
| MIN. | MINIMUM |
| MON. | MONUMENT |
| N | NORTH, NORTHING |
| N/A | NOT APPLICABLE |
| NC | NORMAL CROWN |
| NTS | NOT TO SCALE |
| O.C. | ON CENTER |
| O.TO O. | OUT TO OUT |
| OD | OUTSIDE DIAMETER |
| OG | ORIGINAL GROUND |
| PC | POINT OF CURVE |
| PCC | POINT OF COMPOUND CURVE |
| | PORTLAND CEMENT CONCRETE |
| PCS | POINT OF CURVE TO SPIRAL |
| PF | PEDESTRIAN FENCE |
| PI | POINT OF INTERSECTION |
| PIP | PROTECT IN PLACE |
| PL. | PLATE |
| POB | POINT OF BEGINNING |
| POC | POINT OF CURVE |
| POE | POINT OF ENTRY |
| | POINT OF ENDING |
| POS | POINT OF SPIRAL |
| POT | POINT OF TANGENT |
| PS | POINT OF TANGENT SPIRAL |
| PSC | POINT OF SPIRAL CURVE |
| PSI | POUND PER SQUARE INCH |
| PST | POINT OF SPIRAL TANGENT |
| PT | POINT OF TANGENT |
| PVMT. | PAVEMENT |
| PVC | POINT OF VERTICAL CURVATURE |
| PVI | POINT OF VERTICAL INTERSECTION |
| PVT | POINT OF VERTICAL TANGENT |
| STD | STANDARD |
| STGR | STRINGER |
| STIFF. | STIFFENER |
| STRUCT. | STRUCTURAL |
| STS | POINT OF SPIRAL TO TANGENT SPIRAL |
| SYM. | SYMMETRICAL |
| T | TANGENT DISTANCE |
| T. | TOWNSHIP |
| TBD. | TO BE DETERMINED |
| TBM | TEMPORARY BENCH MARK |
| TH | THICKNESS |
| THD | THREAD |
| TS | POINT OF TANGENT TO SPIRAL |
| TS | TANGENT DISTANCE (SPIRALED CURVE) |
| TYP. | (TYPICAL) |
| UNO | UNLESS NOTED OTHERWISE |
| V | DESIGN SPEED |
| VERT | VERTICAL |
| VF | VEHICULAR FENCE |
| VPH | VEHICLE PER HOUR |
| VPI | VERTICAL POINT OF INTERSECTION |
| W | WEST |
| W/ | WITH |
| WSE | WATER SURFACE ELEVATION |
| WTR | WATER |
| YDS | SQUARE YARD |
| YD3 | CUBIC YARD(S) |

## GENERAL SYMBOLS LIST

- BREAK LINE
- TREE LINE
- Cx — OVERHEAD COMMUNICATION LINE
- Cx — UNDERGROUND COMMUNICATION LINE
- SDx — STORM DRAINAGE LINE
- WATER OR IRRIGATION LINE (24" & SMALLER LINE)
- EXISTING BARBED WIRE FENCE
- E — EXISTING ELECTRIC (OVERHEAD)
- E — ELECTRIC (UNDERGROUND)
- O — OIL OR PETROLEUM LINE
- TELEPHONE LINE
- Wx — EXISTING WATER LINE
- SURVEY CONTROL MONUMENT
- SIGN
- DITCH
- DITCH CENTER LINE
- ROADWAY
- R/W — CONSTRUCTION LINE
- CONSTRUCTION LIMITS
- PROPERTY LINE
- EDGE OF EXISTING ASPHALT
- FIRE HYDRANT
- DOWN GUY
- TELEPHONE/SIGNAL PULL BOX
- PROPERTY CORNER
- CULVERT
- CP — PIPE CULVERT
- PULL BOX FOR POWER/CONTROL
- PULL BOX FOR TELEPHONE/INSTRUMENTATION
- POSSIBLE KEY PAD LOCATION
- GATE PIER FOUNDATION
- R.O.W. — RIGHT-OF-WAY
- TRAFFIC FLOW PATTERN
- EXISTING RETAINING WALL

- PROPOSED GATE
- EXISTING BORDER FENCE CORNER
- 31 — EXISTING CONTOUR
- 34 — PROPOSED CONTOUR
- PROPOSED BOLLARD FENCE
- SF — SILT FENCE
- MAIL — MAILBOX
- GP — GUARD POST (BOLLARD)
- BOREHOLE
- PP#/XFMR — POWER POLE WITH TRANSFORMER
- PIPE — VERTICAL PIPE
- CDC — COMMUNICATION DROP CONNECTION
- C-RISER — COMMUNICATION RISER
- C-UNG — UNDERGROUND COMMUNICATION MARKER
- CAM — SECURITY CAMERA
- UTILITY POLE
- EDC — ELECTRIC DROP CONNECTION
- GROUND ROD
- LIGHT POLE, PULLBOX AND LIGHTING
- LIGHT
- LIGHT POLE
- XXX — ELECTRIC METER
- ELECTRIC PANEL
- SWITCH
- JUNCTION BOX
- WV — WATER VALVE
- WATER METER
- IV — IRRIGATION VALVE
- EVERGREEN TREE
- DECIDUOUS TREE
- ASPHALT ROADWAY
- CONCRETE
- AGGREGATE ROADWAY

US Army Corps of Engineers ®

| DATE | DESCRIPTION | MARK |
|---|---|---|
| | | |

DESIGNED BY: X
DRAWN BY: X
CHECKED BY: X
ISSUED DATE:
SOLICITATION NO:
CONTRACT NO.:
FILE NUMBER:
SUBMITTED BY: X
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD, SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

ABBREVIATIONS

SHEET ID
LAGRULLA
G-002

## GENERAL:

1. ANY AND ALL DAMAGE TO EXISTING ROADS, CONCRETE LINED DITCH, FENCE UTILITIES AND ALL OTHER EXISTING STRUCTURES RESULTING FROM THE CONTRACTOR'S CONSTRUCTION SHALL BE REPLACED AND REPAIRED TO ORIGINAL CONDITION OR BETTER AND TO THE SATISFACTION OF THE COR AT THE EXPENSE OF THE CONTRACTOR.

2. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWING OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND / OR GREATER QUANTITY. STRENGTH OR SIZE INDICATED, SPECIFIED, OR NOTED SHALL BE PROVIDED.

3. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT NOT LIMITED TO,THE ADDITION OF WHATEVER TEMPORARY BRACING, SHORING, GUYS OR TIE-DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER COMPLETION OF THE PROJECT.

4. THE CONTRACTOR , AT HIS OWN EXPENSE, SHALL RESPOND TO COMPLAINTS REGARDING DUST AND NOISE POLLUTION RESULTING FROM HIS WORK.

5. THE CONTRACTOR SHALL PROVIDE SAFE ACCESS TO AND FROM ALL DRIVEWAYS AND STREETS, PAVED OR UNPAVED, AT ALL TIMES DURING CONSTRUCTION.

6. THE CONTRACTOR SHALL VERIFY AND CHECK ALL DIMENSIONS, LOCATIONS, ELEVATIONS AND DETAILS SHOWN ON THESE DRAWINGS PRIOR TO START OF CONSTRUCTION. ANY UNCERTAINTIES AND DISCREPANCIES SHALL BE IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER FOR CLARIFICATION PRIOR TO COMMENCING THAT WORK FEATURE..

7. THE PROJECT SHALL BE SECURED AT ALL TIMES DURING CONSTRUCTION.

8. THE CONTRACTOR SHALL DISPOSE OF ALL CONSTRUCTION DEBRIS AND OTHER WASTE MATERIAL OFF THE GOVERNMENT OWNED LAND AT AN APPROVED OFF-SITE DISPOSAL AREA IN ACCORDANCE WITH APPLICABLE REGULATORY AGENCY REQUIREMENTS. ALL PERMITS REQUIRED FOR OFF-SITE DISPOSAL SHALL BE OBTAINED BY THE CONTRACTOR.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLIANCE WITH AND THE ENFORCEMENT OF ALL APPLICABLE SAFETY REGULATIONS. ACCORDING TO EM 385-1-1 SAFETY AND HEALTH REQUIREMENTS MANUAL.

10. IN CASE OF DISCREPANCY BETWEEN THE SPECIFICATIONS AND CONSTRUCTION DOCUMENTS, THE MORE STRINGENT SHALL APPLY.

11. DURING CONSTRUCTION, STRUCTURE MAY BE BUOYANT. IN THE EVENT OF FAILURE OF DEWATERING SYSTEM AND THE EXCAVATION BECOMES FLOODED OR THE SURROUNDING GROUND BECOMES SATURATED. THE CONTRACTOR SHALL SUBMIT A PLAN TO PREVENT FLOATING OF THE STRUCTURE.

12. ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE USACE, DHS AND USIBWC.

13. THE CONTRACTOR SHALL PRESERVE AND PROTECT OR REMOVE (WITH PRIOR WRITTEN APPROVAL OF AFFECTED PROPERTY OWNER'S) ALL TREES, SHRUBS, HEDGES, RETAINING WALLS. LANDSCAPING, BUILDINGS, WALKS,ETC..., IN OR NEAR CONSTRUCTION AREA. CONTRACTORS SHALL TRIM AND / OR CUT AS NECESSARY ANY TREE OR BRANCH WITHIN OR EXTENDING INTO THE ENFORCEMENT ZONE IN ORDER TO PROVIDE A CLEAR ZONE.

14. INTERMITTENT SURVEY MONUMENTS MAY BE UNCOVERED DURING FENCE REMOVAL THAT ARE NOT SHOWN ON THE PLANS. THESE MONUMENTS SHALL BE PROTECTED IN PLACE. REALIGN FENCE AROUND MONUMENT TO CLEAR CONCRETE MONUMENT FOOTING (3 FEET OFFSET NOT REQUIRED).

15. THE CONTRACTOR SHALL COORDINATE WITH PRIVATE LANDOWNERS TO MAINTAIN ACCESS TO PRIVATE PROPERTY DURING CONSTRUCTION.

16. CONTRACTOR MAXIMUM SPEED THROUGH THE CONSTRUCTION FOR BORDER PATROL MUST ALWAYS BE ALLOWED.

17. UNOBSTRUCTED ACCESS THROUGH THE CONSTRUCTION FOR BORDER PATROL MUST ALWAYS BE ALLOWED.

18. CONTRACTOR SHALL HIRE A PROFESSIONAL GEOTECHNICAL ENGINEER TO PROVIDE INSPECTION OF EXCAVATIONS AND SOIL/GROUNDWATER CONDITIONS THROUGHOUT CONSTRUCTION. THE GEOTECHNICAL ENGINEER IS RESPONSIBLE FOR PERFORMING PRE-CONSTRUCTION AND PERIODIC SITE VISITS THROUGHOUT CONSTRUCTION TO ASSESS THE SITE CONDITIONS. ALL COMMUNICATION WITH THE CONTRACTOR WILL BE COORDINATED WITH AND THROUGH THE CONTRACTING OFFICER OR COR TO CHANGE OR CLARIFY THE CONTRACT DOCUMENTS. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE 24-HOUR ADVANCE NOTICE TO THE COR AS WELL AS A WRITTEN SUMMARY REPORT TO COR, WITH REGARD TO ANY SITE VISIT THAT IS COMPLETED BY THE CONTRACTOR'S GEOTECHNICAL ENGINEER.

19. ALL UTILITIES LOCATIONS ARE APPROXIMATE AND TO BE VERIFIED BY THE CONTRACTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY AND LOCATE ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES PRIOR TO THE START OF DESIGN CONSTRUCTION.

20. CONTRACTOR SHALL MAINTAIN ALL BARBED WIRE FENCES STANDING AT ALL TIMES AND SHALL REPAIR OR REPLACE IF DAMAGED AT CONTRACTOR'S EXPENSE. CONTRACTOR SHALL CLOSE ALL OPEN AREAS WHERE FENCE IS REMOVED WITH BARBED WIRE TO PREVENT CATTLE CROSSING ON THE BORDER. CONTRACTOR SHALL GUARANTEE THAT NO CATTLE WILL CROSS INTO THE US DURING CONSTRUCTION.

21. ALL BORDER MONUMENTS SHALL BE PROTECTED IN PLACE.

22. DESIGN LOADS
    WIND LOAD:
    - BASIC WIND SPEED 116 MPH
    - EXPOSURE C

EARTHQUAKE DESIGN DATA
- SPECTRAL RESPONSE ACCELERATION. Ss 0.044
- SPECTRAL RESPONSE ACCELERATION. S1 0.013
- SITE CLASS D
- SPECTRAL RESPONSE ACCELERATION. SDS 0.044
- SPECTRAL RESPONSE COEFFICIENT. SD1 0.023
- SEISMIC DESIGN CATEGORY. SD1 A

23. THE CONTRACTOR'S TRAFFIC CONTROL PLAN SHALL CONFORM TO THE MORE STRINGENT REQUIREMENT(S) OF TXDOT AND EM385-1-1 REQUIREMENTS.

## DEMOLITION AND STRUCTURAL STEEL REMOVAL:

1. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL ITEMS CALLED FOR IN THE PLANS AT AN APPROVED OFF-SITE LOCATION.

2. SEE SECTION 02 41 00 DEMOLITION FOR ADDITIONAL INFORMATION.

3. AT SEVERAL LOCATIONS, ITEMS, SUCH AS BUT NOT LIMITED TO TRAFFIC SIGNS AND MEMORIAL ITEMS, ARE ATTACHED TO THE EXISTING FENCING. IF SUCH ITEMS ARE NOT REMOVED BY LOCAL AUTHORITIES PRIOR TO FENCE DEMOLITION CONTRACTOR SHALL REMOVE SUCH ITEMS AND TURN THEM OVER TO THE COR.

4. AT ALL WASHES, WASH NUMBER SIGNS THAT ARE WELDED TO EXISTING FENCING SHALL BE REMOVED AND TURNED OVER TO COR TO GIVE BORDER PATROL. CONTRACTOR SHALL COORDINATE THROUGH COR WITH BORDER PATROL TO PLACE BACK ONTO NEW FENCE.

## CLEARING AND GRUBBING:

1. PRIOR TO GENERAL SITE GRADING, AREAS TO RECEIVE NEW STRUCTURES SHALL BE STRIPPED OF ANY EXISTING STRUCTURES AND VEGETATION.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR TRIMMING AND REMOVAL OF TREE OBSTRUCTING FENCE REPLACEMENT. FOR TREES ROOTED IN MEXICO THAT REQUIRE TRIMMING, CONTRACTOR SHALL COORDINATE WITH THE COR PRIOR TO CONDUCTING WORK.

3. WASTE MATERIALS INCLUDING VEGETATION, ROOTS, CONCRETE, SLURRY AND DEBRIS SHALL BE DISPOSED OF OFF-SITE BY CONTRACTOR.

## EXISTING UTILITIES:

1. LOCATIONS OF UNDERGROUND UTILITIES ARE FROM BEST INFORMATION AVAILABLE AT THE TIME THESE PLANS WERE PREPARED. THE GOVERNMENT DOES NOT WARRANT THE ACCURACY OF THE INFORMATION AVAILABLE AT THE TIME THESE PLANS WERE PREPARED. THE GOVERNMENT DOES NOT WARRANT THE ACCURACY OF THE INFORMATION PROVIDED. ANY DEVIATION SHALL BE CALLED TO THE ATTENTION OF THE COR PRIOR TO PROCEEDING WITH WORK IN THE AREA OF FOUND UTILITIES.

2. APPROXIMATE LOCATIONS OF KNOWN EXISTING UTILITIES ARE SHOWN. CONTRACTOR SHALL DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATIONS IN THE FIELD PRIOR TO COMMENCING WORK. CONTRACTOR TO BE FULLY RESPONSIBLE FOR DAMAGES WHICH MIGHT OCCUR BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE EXISTING UTILITIES AND /OR STRUCTURES.

3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO HAVE ALL UTILITIES LOCATED AND MARKED PRIOR TO THE START OF CONSTRUCTION. ANY FOUND UTILITIES NOT STATED ABOVE SHALL BE BROUGHT TO THE ATTENTION OF THE COR FOR DIRECTION. PRIOR TO PROCEEDING WITH CONSTRUCTION IN THE AREA OF SAID UTILITIES.

4. PUBLIC AND PRIVATE UTILITY LINES AND CUSTOMER SERVICE LINES MAY EXIST THAT ARE NOT SHOWN ON THE CONSTRUCTION DRAWINGS. IT SHALL BE CONTRACTOR'S RESPONSIBILITY TO LOCATE, MAINTAIN AND PROTECT THE INTEGRITY OF THESE LINES. HAND EXCAVATION MAY BE REQUIRED.

5. CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANY TO RELOCATE OR DIVERT ANY UTILITY IN CONFLICT WITH PROPOSED CONSTRUCTION SO AS NOT TO DISRUPT SERVICE OF IT. CONTRACTOR SHALL RESTORE, RELOCATED OR DIVERT UTILITY TO ITS ORIGINAL CONDITION AND LOCATION WHEN APPLICABLE UPON COMPLETION OF CONSTRUCTION, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ALL UTILITY ADJUSTMENTS AND ACQUIRE ALL REQUIRED PERMITS FOR RELOCATION.

6. THE VERIFIED LOCATIONS OF ALL UTILITIES SHALL BE DEPICTED ON THE WORKING RECORD DRAWINGS AND FINAL AS-BUILT DRAWINGS.

7. CONTACT THE CITY OF LAGRULLA AT (956) 487-3341 FOR UTILITY LOCATES WITHIN THE LIMITS OF CONSTRUCTION.

## DRAINAGE:

6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE DRAINAGE AT ALL TIMES DURING CONSTRUCTION OF PROPOSED FACILITIES.

7. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES DURING THE INSTALLATION OF THE STRUCTURES AND DRAINAGE IMPROVEMENTS.

## SWPPP:

1. IMPLEMENT SWPPP AS REQUIRED BY TCEQ REQUIREMENTS AND PROJECT SPECIFICATIONS PRIOR TO CONSTRUCTION IMPLEMENT BEST MANAGEMENT PRACTICES (BMPS) DESCRIBED IN THE SWPPP TO REDUCE EROSION. SEE SECTION 01 57 19 ENVIRONMENTAL CONTROLS.

2. THE CONTRACTOR SHALL ENSURE THAT BMPS ARE IN PLACE PRIOR TO AND DURING CONSTRUCTION OF THE FENCE. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT EROSION AND SEDIMENT CONTROL MEASURES COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS.

3. THE CONTRACTOR SHALL PROVIDE ONE SWPPP REPORT AND PLANS FOR CONSTRUCTION OF THE BASE BID AND OPTION ITEMS, PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN A NOTICE OF INTENT AND COMPLETE THE NOTICE OF ENDING UPON COMPLETION.

4. THE COR RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO MODIFY OR REVISE THE SWPPP TO ENSURE THAT ALL CURRENT MEASURES TO PREVENT OFF-SITE MIGRATION OF POLLUTANTS, INCLUDING SOILS, ARE INCLUDED IN THE SWPPP. IF SWPPP DOES NOT ADEQUATELY ADDRESS APPLICABLE BMPS OR IF THE CONTRACTING OFFICER DETERMINES THAT THE STORM WATER POLLUTION PREVENTION REQUIREMENTS ARE NOT BEING MET.

## TUNNELS:

1. IN THE EVENT THAT AN UNDERGROUND TUNNEL OR VOID IS DISCOVERED DURING EXCAVATION, THE DESIGN - BUILD CONTRACTOR SHALL IMMEDIATELY CONTACT THE COR AND BORDER PATROL. THE DESIGN - BUILD CONTRACTOR SHALL INCLUDE THE LOCATION(S ) AND DIMENSIONS OF ANY TUNNELS DISCOVERED ON BOTH THE WORKING RECORD DRAWINGS AND FINAL AS-BUILT DRAWINGS.

2. THE LOCATIONS OF ALL TUNNELS DISCOVERED SHALL BE DEPICTED ON THE WORKING RECORD DRAWINGS AND FINAL AS-BUILT DRAWINGS.

## SEDIMENT CONTROL:

1. CONTRACTOR SHALL PROVIDE AND MAINTAIN SEDIMENT CONTROL SERVICES IN ACCORDANCE WITH THE CONTRACT DOCUMENT THROUGH THE TERM OF THE WORK COVERED BY HIS CONTRACT. SEE SECTION 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS.

## ON-SITE FILL:

1. SOIL EXCAVATED FROM THE PROJECT SITE SHALL BE CONSIDERED ON -SITE FILL.

2. ON-SITE FILL REQUIRED TO BRING THE SITE TO GRADE SHALL BE FREE OF VEGETATION AND DEBRIS, AND CONTAIN NO ROCKS OR LUMPS LARGER THAN 3 INCH NOMINAL DIAMETER.

3. EXCAVATED ON-SITE SOILS MEETINGS THE REQUIREMENTS FOR ENGINEERED FILL MAY BE REUSED AS ENGINEERED FILL.

4. EXCAVATED ON-SITE SOILS NOT MEETING THE REQUIREMENTS FOR ENGINEERED FILL MAY BE REUSED FOR FILL WITHIN THE ENFORCEMENT ZONE TO ADJUST GRADE PROVIDED IT DOES NOT CONTAIN ROOTS, ORGANICS, TRASH, DELETERIOUS, UNSUITABLE OR UNSATISFACTORY MATERIAL AS DEFINED BY USIBWC LEVEE CONSTRUCTION GUIDELINES, AND SECTION 31 00 00 EARTHWORK PLAN SPECIFICATIONS, INCLUDING COHESIONLESS MATERIAL (SP SW SM GC GM GP GW)

5. EXCAVATED ON-SITE SOILS NOT MEETING THE REQUIREMENTS FOR ENGINEERED FILL MAY BE MODIFIED / CONDITIONED EITHER THROUGH LIME STABILIZATION OR BLENDING TO MEET THE REQUIREMENTS FOR ENGINEERED FILL AND USED WITHIN THE PROJECT SITE PROVIDED IT DOES NOT CONTAIN ROOTS, ORGANICS, DELETERIOUS OR UNSATISFACTORY MATERIALS AS DEFINED BY USIBWC LEVEE CONSTRUCTION GUIDELINES AND SECTION 31 00 00 EARTHWORK PLAN SPECIFICATIONS. ITS IS ESTIMATED 4% HYDRATED LIME WILL BE REQUIRED TO RAISE THE PH AND CONDITION ON-SITE-HIGH PLASTICITY CLAYS. TESTING WILL BE REQUIRED DURING CONSTRUCTION TO VALIDATE THE ESTIMATE. THE CONTRACTOR SHOULD BE AWARE THAT SOIL PROPERTIES VARY WITHIN THE PROJECT SITE, AND THE QUANTITY OF LIME ESTIMATED TO CONDITION THE ON-SITE SOILS MAY CHANGE.

6. EXISTING CALICHES /AGGREGATE SURFACE COURSE EXCAVATED FROM THE EXISTING ROAD MAY NOT BE REUSED AS AGGREGATE SURFACE COURSE FOR THE NEW PATROL ROAD OR CREST ROAD. EXISTING CALICHE/AGGREGATE SURFACE COURSE MAY BE REUSED AS FILL WITHIN THE ENFORCEMENT ZONE,OR USED AS SUBBASE MATERIAL WITHIN THE PATROL ROAD TO REDUCE THE AGGREGATE SURFACE MATERIAL WITHIN THE PATROL ROAD TO REDUCE THE AGGREGATE SURFACE COURSE REQUIREMENTS. SEE ALL WEATHER ROAD (SEE CIVIL NARRITIVE), PROVIDED IT DOES NOT CONTAIN ROOTS, ORGANICS, DELETERIOUS OR UNSATISFACTORY MATERIAL AS DEFINED BY USIBWC LEVEE CONSTRUCTION GUIDELINES, AND SECTION 31 00 00 EARTHWORK PLAN SPECIFICATIONS.

7. NO ON-SITE FILL SHALL BE PLACED ON OR AGAINST CONCRETE LESS THAN 7 DAYS AFTER PLACEMENT OR 70 PERCENT OF THE DESIGN STRENGTH WITHOUT PRIOR APPROVAL OF THE CONTRACTING OFFICER. CRAWLER-TYPE TRACTORS,VIBRATORY EQUIPMENT AND OTHER SIMILAR COMPACTION EQUIPMENT SHALL NOT BE USED WITHIN 4 FEET OF ANY COMPLETED OR PARTIALLY COMPLETED STRUCTURE. COMPACTION WITHIN 4 FEET OF COMPLETED OR PARTIALLY COMPLETED STRUCTURES SHALL BE ACCOMPLISHED BY THE USE OF MECHANICAL HAND TAMPERS, VIBRATING PLATES, OR OTHER APPROVED METHODS AND EQUIPMENT. FILL MATERIAL SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY WITHIN ±3% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D 698. CONTRACTOR WILL ENSURE THAT COMPACTION OPERATIONS DO NOT DAMAGE ANY EXISTING UTILITIES OR STRUCTURE. ANY DAMAGE CAUSED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE..

8. FILL PLACED ON ENGINEERED FILL OR NATURAL SLOPES STEEPER THAN 5H:1V SHALL BE KEYED AND BENCHED INTO EXISTING SLOPE. THE BENCHES SHALL BE WIDE ENOUGH TO ACCOMMODATE THE COMPACTION EQUIPMENT AND THE LOWEST BENCH SHALL BE THE WIDEST AT A MINIMUM OF 8 TO 10 FEET WIDE. BENCH HEIGHTS SHALL BE A MAXIMUM OF 3 FEET. BENCH WIDTHS AT THE TOP SHALL BE A MINIMUM OF 4 FEET.

## EGRESS/INGRESS ROAD AND STAGING AREAS:

1. THE CONTRACTOR MAY USE THE PUBLIC ROADS SHOWN ON THE LOCATION MAP IN THE PLANS FOR INGRESS / EGRESS TO THE PROJECT SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE AT THESE LOCATIONS DUE TO CONSTRUCTION.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROCURING AND MAINTAINING THE STAGING AREA.

3. SAFE ACCESS THROUGH WORK SITE SHALL BE MAINTAINED AT ALL TIMES. MATERIAL AND EQUIPMENT SHALL NOT BE STAGED SUCH AS TO LIMIT ACCESS THROUGH THE CONSTRUCTION SITE.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROCURING AND MAINTAINING THE STOCKPILE AREA. STOCKPILE AREA WILL BE LOCKED OUTSIDE THE FLOOD PLAIN.

5. THE CONTRACTOR SHALL NOT HAVE CONTACT WITH PRIVATE PROPERTY OWNERS FOR EGRESS / INGRESS ACCESS WITHOUT SPECIFIC APPROVAL FROM USACE AND CBP.

## EXCAVATION:

1. ALL EXCAVATED MATERIAL IS TO BE REMOVED FROM THE PROJECT PERMANENT EASEMENTS AND STAGING AREAS AND DISPOSES OF AT AN APPROVED DISPOSAL LOCATION. UNLESS OTHERWISE NOTED OR APPROVED FOR USE AS BACK FILL MATERIAL. EXCAVATED MATERIAL SHALL NOT BE STORED IN THE RIVER FLOOD PLAIN.

2. TRUCKS SHALL BE LOADED IN A MANNER SO AS TO AVOID LOSS OF LOADED MATERIAL OR ANY PORTION THEREOF DURING TRANSPORT IN ACCORDANCE WITH STATE LAW.

3. THE CONTRACTOR SHALL, AT HIS/HER OWN EXPENSE, REPAIR ANY HAUL ROAD SURFACE IRREGULARITIES CAUSES BY LOADING OR HAULING OPERATIONS.

4. ALL TEMPORARY EXCAVATIONS MUST COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL SAFETY REGULATION.

## PREPARED SUBGRADE:

1. DUE TO THE VARIABILITY OF SITE SOILS, ISOLATED AREAS OF THE SUBGRADE MAY REQUIRE OVER-EXCAVATION AND RECOMPACTION TO MITIGATE LOOSE OR DISTURBED SOIL CONDITIONS. SUBGRADE FOR THE ENTIRE BORDER ROAD SHALL BE PROOF ROLLED IN ACCORDANCE WITH SECTION 31 00 00 EARTHWORK, SUBSECTION 3.12.1 PROOF ROLLING. ANY AREAS OBSERVED TO DEFLECT UNDER THE PRESSURE EXERTED BY THE PROOF ROLLING OPERATIONS WILL REQUIRE OVER-EXCAVATION AND REPLACEMENT WITH ENGINEERED FILL.

2. FOR CUT AREAS, CUT PROPOSED ROAD TO GRADE, SCARIFY TOP 8 INCHES OF SUBGRADE AND MOISTURE CONDITION. FOR FILL AREAS, SCARIFY TOP 6 INCHES OF EXISTING GRADE AND MOISTURE AND CONDITION.

3. COMPACT SUBGRADE FOR CUTTING AREAS TO 95% OF ASTM D1557 AT ±2% OF OPTIMUM MOISTURE CONTENT. FILL MATERIAL SHALL BE TESTED IN 8-INCH LOOSE/ COMPACTED TO 6 INCHES UNDER ROADWAYS AND 12-INCH LOOSE/COMPACTED TO 8-INCHES IN OTHER FILL LOCATIONS AND SHALL CARRY SIMILAR SOIL PROPERTIES AS SHOWN ON BORING LOGS. COMPACTION OF FILL MATERIAL IN SUBGRADE SHALL BE TO 95% OF ASTM D1557 AT ±2% OF OPTIMUM MOISTURE CONTENT.

4. SITE GRADING PERFORMED DURING OR SUBSEQUENT TO WET WEATHER MAY RESULT IN NEAR-SURFACE SITE SOILS WITH MOISTURE CONTENTS SIGNIFICANTLY ABOVE OPTIMUM. THIS CONDITION COULD HAMPER EQUIPMENT MANEUVERABILITY AND EFFORTS TO COMPACT SITE SOILS TO THE RECOMMENDED COMPACTION CRITERIA. DURING MOST OF THE YEAR, THE SITE WILL TYPICALLY DRY TO WORKABLE MOISTURE CONTENTS WITHIN 1 TO 2 DAYS. IF TIME IS CRITICAL FACTOR. DISKING FOR AERATION, CHEMICAL TREATMENT, REPLACEMENT WITH DRIER MATERIAL, STABILIZATION WITH GEOTEXTILE FABRIC OR OTHER METHODS MAY BE IMPLEMENTED TO REDUCE EXCESSIVE SOIL MOISTURE AND FACILITATE EARTHWORK OPERATIONS. THIS WILL BE DONE AT NO ADDITIONAL COST TO THE GOVERNMENT. ALL COMMUNICATION WITH CONTRACTOR SHALL BE COORDINATED WITH AND THROUGH THE COR TO CHANGE OR CLARIFY THE CONTRACT DOCUMENTS. ANY FIELD DIRECTIVES WILL BE COORDINATED WITH AND ISSUED BY THE COR.

## FOUNDATIONS:

1. FOUNDATIONS SHALL BE CAST ON PROPERLY COMPACTED SOIL. NATIVE SOILS SHALL BE COMPACTED TO AT LEAST 95% TO THE MAXIMUM DRY DENSITY AT ±2% OF OPTIMUM MOISTURE (ASTM D1557).

2. WHERE NATIVE SOILS ARE LOOSE, SATURATED OR UNSTABLE AND DO NOT MEET THE ALLOWABLE BEARING CAPACITY, NATIVE SOILS SHALL BE OVER-EXCAVATED BELOW THE BOTTOM OF THE FOOTING ELEVATION TO SOIL ELEVATION MEETING THE DESIGN PARAMETERS. THE OVER-EXCAVATED AREAS SHALL BE BACK FILLED AND COMPACTED USING ENGINEERED FILL. SEE SECTION 31 00 00 EARTHWORK FOR ADDITIONAL INFORMATION. SOIL CONDITIONS WILL VARY AND HENCE COMPACTION MUST RELATE TO THE TYPE OF MATERIAL.

3. CONTRACTOR SHALL BE PREPARED TO SHORE AND FORM TRENCH FOOTING WHERE LOOSE SOILS ARE ENCOUNTERED.

4. FOUNDATION DETAILS FOR BOLLARDS NEED TO BE SUBMITTED (AFTER A GEOTECHNICAL STUDY IS COMPLETED). FOUNDATION DETAILS MAY FROM ONE LOCATION TO ANOTHER DEPENDING UPON SOIL TYPE.

5. CONTRACTOR SHALL DEVELOP TRENCH DEWATERING PLANS WHERE NECESSARY PRIOR TO FOUNDATION PLACEMENT.

## CAST-IN PLACE CONCRETE:

1. ALL CONCRETE STRENGTH SHALL CONFORM TO SECTION 03 30 00 CAST-IN- PLACE CONCRETE. SEE SECTION 03 30 00 CAST-IN -PLACE CONCRETE FOR ADDITIONAL INFORMATION.

2. CONCRETE WORK TO BE COVERED IN ACCORDANCE WITH "THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" ACI 318.

3. CONTRACTOR SHALL REVIEW ALL DRAWINGS FOR SIZE AND LOCATION OF EMBEDDED ITEMS AND SLEEVES REQUIRED. THESE ITEMS SHALL BE FURNISHED AND INSTALLED PRIOR TO PLACEMENT OF CONCRETE.

4. ALL MIXING, HANDLING AND TRANSPORTING, PLACING AND CURING OF CONCRETE SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE AMERICAN CONCRETE INSTITUTE.

5. THE ONLY PERSONS AUTHORIZED TO ADD WATER TO THE CONCRETE TRUCK AT THE JOB SITE ARE THE QC TESTING REPRESENTATIVE. IF APPROVED, THE QC TESTING REPRESENTATIVE IS REQUIRED TO NOTIFY THE COR AND QA TESTING REPRESENTATIVE.

6. ALL EXPOSED EDGES SHALL BE CAST WITH A ¾ INCH CHAMFERS UNO.

## REINFORCING STEEL:

1. REINFORCING STEEL SHALL CONFORM TO SECTION 03 20 00.00 10 CONCRETE REINFORCING. NO TACK WELDING OF REINFORCING SHALL BE PERMITTED. PLACEMENT AND DETAILING OF CONCRETE REINFORCEMENT AND ACCESSORIES SHALL BE IN ACCORDANCE WITH ACI 318 AND ACI SP-66, RESPECTIVELY (LATEST ADDITIONS).

2. REBAR SHALL HAVE A MINIMUM COVER OF 3 INCHES UNLESS OTHERWISE NOTED.

3. HORIZONTAL AND VERTICAL REINFORCING STEEL SHALL BE CONTINUOUS ACROSS CONSTRUCTION JOINTS.

4. CONSTRUCTION JOINTS NOT INDICATED ON THE DRAWINGS SHALL BE MADE AND LOCATED AS NOT TO IMPAIR SIGNIFICANTLY THE STRENGTH OF THE STRUCTURE. CONTRACTORS SHALL SUBMIT LOCATION OF PROPOSED JOINTS IN THE SLABS AND WALLS TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

## STRUCTURAL STEEL:

1. STRUCTURAL STEEL SHALL BE PROCURED BY THE CONTRACTOR IN ACCORDANCE WITH SECTION 05 12 00 STRUCTURAL STEEL.

2. STRUCTURAL STEEL SHALL CONFORM TO SECTION 05 12 00 STRUCTURAL STEEL. SEE SECTION 05 12 00 STRUCTURAL STEEL FOR ADDITIONAL INFORMATION.

3. WELDED CONNECTIONS FOR STRUCTURAL STEEL SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.4.

4. STRUCTURAL STEEL SHALL CONFORM TO THE AISC "SPECIFICATIONS FOR DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDING", LATEST EDITION.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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ISSUED DATE:
SOLICITATION NO:
CONTRACT NO.:
FILE NUMBER:

DESIGNED BY: X
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CHECKED BY: X
SUBMITTED BY: X
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

GENERAL NOTES

SHEET ID
LAGRULLA
G-003

| No. | Description | Station | Latitude | Longtitude |
|---|---|---|---|---|
| 1 | Base Start | 10+00.00 | N26° 17' 01.41" | W98° 39' 41.64" |
| 2 | PI | 53+66.35 | N26° 16' 21.38" | W98° 39' 23.48" |
| 3 | PI | 82+49.35 | N26° 15' 53.54" | W98° 39' 30.50" |
| 4 | PI | 84+15.91 | N26° 15' 52.04" | W98° 39' 29.73" |
| 5 | PI | 89+33.00 | N26° 15' 48.84" | W98° 39' 25.30" |
| 6 | PI | 92+91.99 | N26° 15' 48.83" | W98° 39' 21.36" |
| 7 | PI | 99+05.42 | N26° 15' 54.37" | W98° 39' 18.58" |
| 8 | PI | 109+28.15 | N26° 16' 00.29" | W98° 39' 09.46" |
| 9 | PI | 114+76.07 | N26° 16' 00.77" | W98° 39' 03.47" |
| 10 | PI | 126+34.16 | N26° 16' 04.91" | W98° 38' 51.60" |
| 11 | PI | 129+90.47 | N26° 16' 04.39" | W98° 38' 47.73" |
| 12 | PI | 139+46.56 | N26° 16' 03.29" | W98° 38' 37.30" |
| 13 | PI | 147+27.37 | N26° 16' 01.41" | W98° 38' 28.98" |
| 14 | PI | 156+32.67 | N26° 15' 59.03" | W98° 38' 19.39" |
| 15 | Base End/ Option Start | 178+91.74 | N26° 15' 57.47" | W98° 37' 54.63" |
| 16 | PI | 202+01.56 | N26° 15' 56.24" | W98° 37' 29.30" |
| 17 | Option End | 279+93.12 | N26° 15' 45.31" | W98° 36' 04.57" |

E1 FENCE POB, EOP AND PI LOCATIONS
SCALE: NTS

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|
| | | |

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RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE
FENCE PI LOCATION
STA. 10+00.00 - 279+93.00

SHEET ID
LAGRULLA
G-006

D1 KEYPLAN
SCALE: 1" = 300'-0"

0 300 600 1" = 300' - 0"




A1 KEYPLAN
SCALE: 1" = 300'-0"

0 300 600 1" = 300' - 0"

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|
| | | |

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US ARMY CORPS OF ENGINEERS
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ETEGRA
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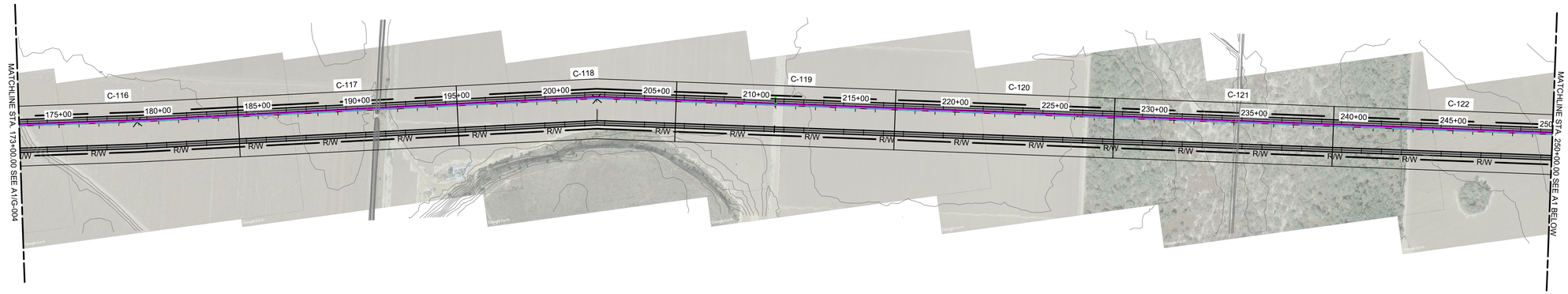
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

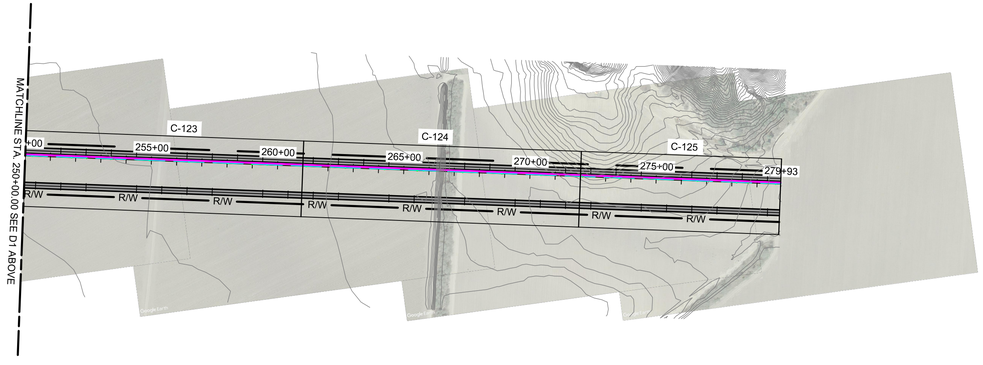
KEYPLAN
STA. 10+00.00 - 173+00.00

SHEET ID
LAGRULLA
G-004




A1 KEYPLAN
SCALE: 1" = 300'-0"

0 300 600 1" = 300' - 0"




A1 KEYPLAN
SCALE: 1" = 300'-0"

0 300 600 1" = 300' - 0"

US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
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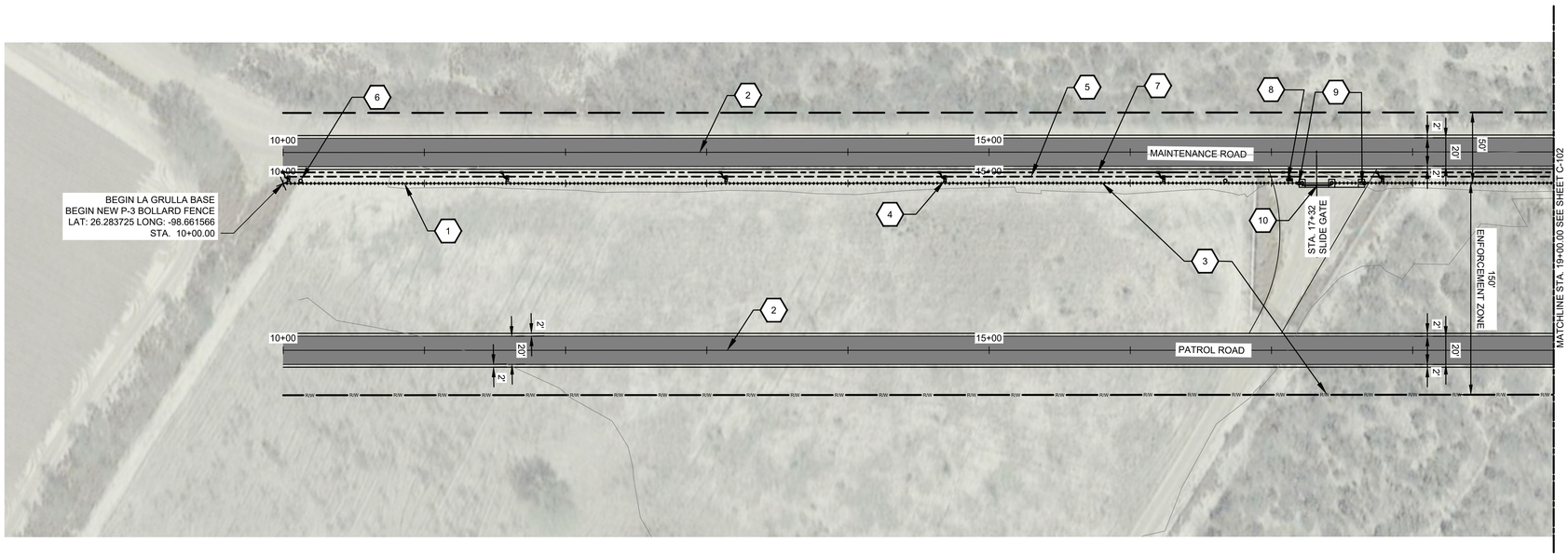
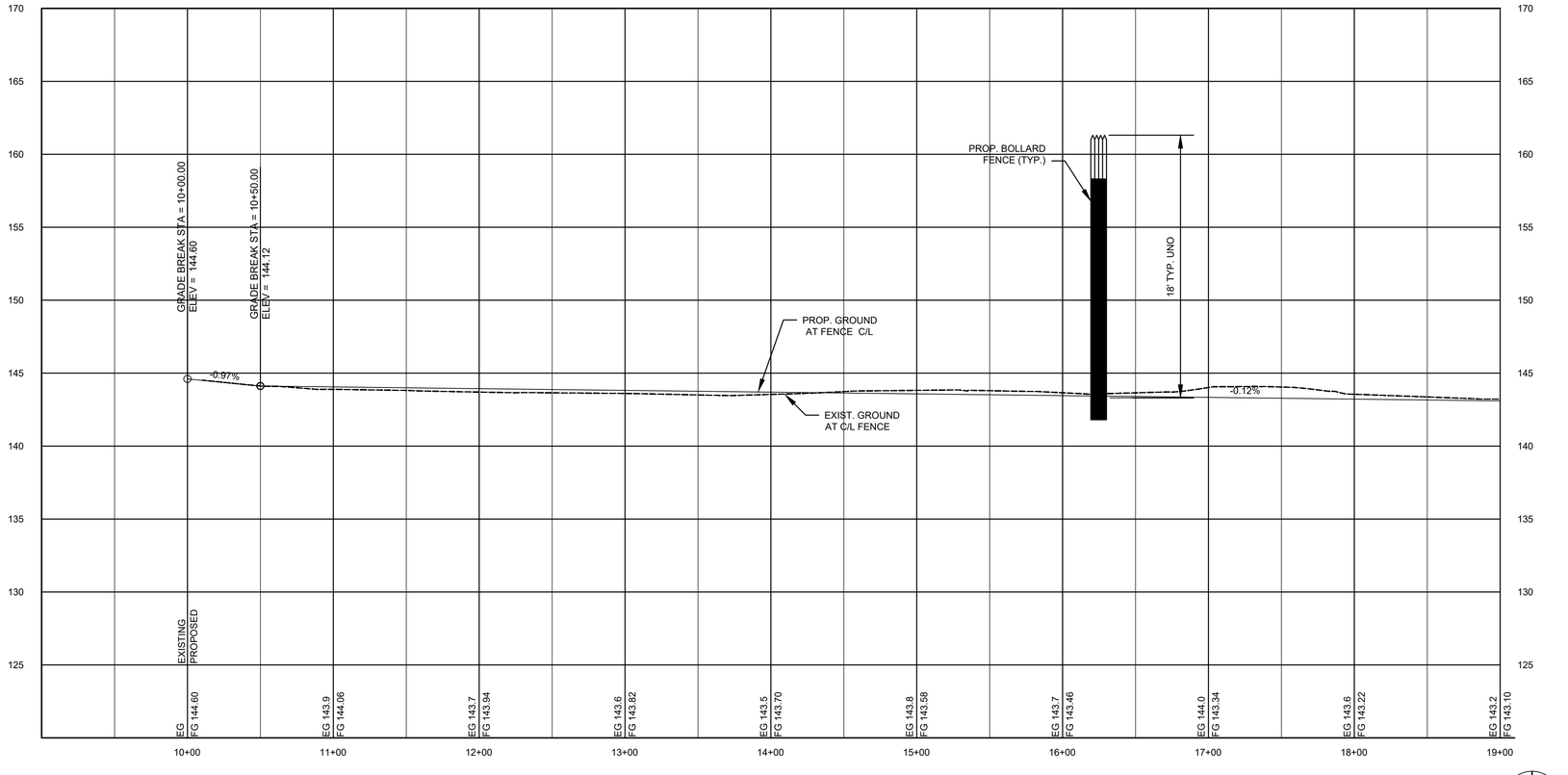
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

KEYPLAN
STA. 173+00.00 - 279+93.00

SHEET ID
LAGRULLA
G-005




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

0 50 100 1' = 50' - 0"
0 5 10 1' = 5' - 0"

## GENERAL NOTES

1. THIS SHEET IS AT 35% CONCEPT DESIGN AND NOT TO BE USED FOR CONSTRUCTION.
2. CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL GEOTECHNICAL TESTING, TOPOGRAPHIC MAPPING, DESIGN, SURVEY STAKE-OUT, ABOVE AND BELOW GROUND UTILITY IDENTIFICATIONS AND REQUIRED RELOCATIONS, AND REMOVAL AND PROPER DISPOSAL OF STRUCTURES, DEBRIS, ETC. LOCATED WITHIN THE ENFORCEMENT ZONE.
3. CONTRACTOR SHALL ENSURE THAT ALL DESIGNS MEET TACTICAL INFRASTRUCTURE STANDARDS, LATEST EDITION.
4. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES, IRRIGATION CULVERTS AND DRAINAGE STRUCTURES, AND ADJUST/RELOCATE AS REQUIRED TO DE-CONFLICT WITH THE PROPOSED BOLLARD FENCE AND ENFORCEMENT ZONE (I.E.: EX. IRRIGATION VALVES TO BE RELOCATED TO NORTH LEVEE EMBANKMENT).
5. CONTRACTOR SHALL DESIGN AND INSTALL ALL DRAINAGE SYSTEMS FOR THIS PROJECT.
6. LIGHTING LOCATIONS ARE CONCEPTUAL. CONTRACTOR TO PROVIDE FINAL LIGHTING COMPUTATIONS AND LOCATIONS.

## XX KEYNOTES

1. PROPOSED NEW TYPE P-3 BOLLARD FENCE.
2. PROPOSED TYPE FC-2 AGGREGATE ALL-WEATHER ROAD.
3. CLEAR VEGETATION AND GRADE WITHIN ENFORCEMENT ZONE.
4. PROPOSED LIGHT POLE, PULLBOX, AND LIGHTING - SEE ELEC. FOR LOCATIONS (TYP).
5. PROPOSED POWER AND LIGHTING DISTRIBUTION CABLE AND CONDUIT/ DUCT BANK.
6. PROPOSED FENCE GROUNDING LOCATION.
7. PROPOSED COMMUNICATION CONDUIT/ DUCTBANK. (CABLE FUTURE BY OTHERS)
8. GATE ELECTRICAL DISTRIBUTION EQUIPMENT.
9. GATE GROUNDING LOCATION
10. PROPOSED MOTORIZED VEHICLE SLIDE GATE.
11. PROPOSED RVSS SITE.
12. CONCEPTUAL ELECTRICAL UTILITY CONNECTION POINT.
13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|

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FILE NUMBER:
SIZE: ANSI D

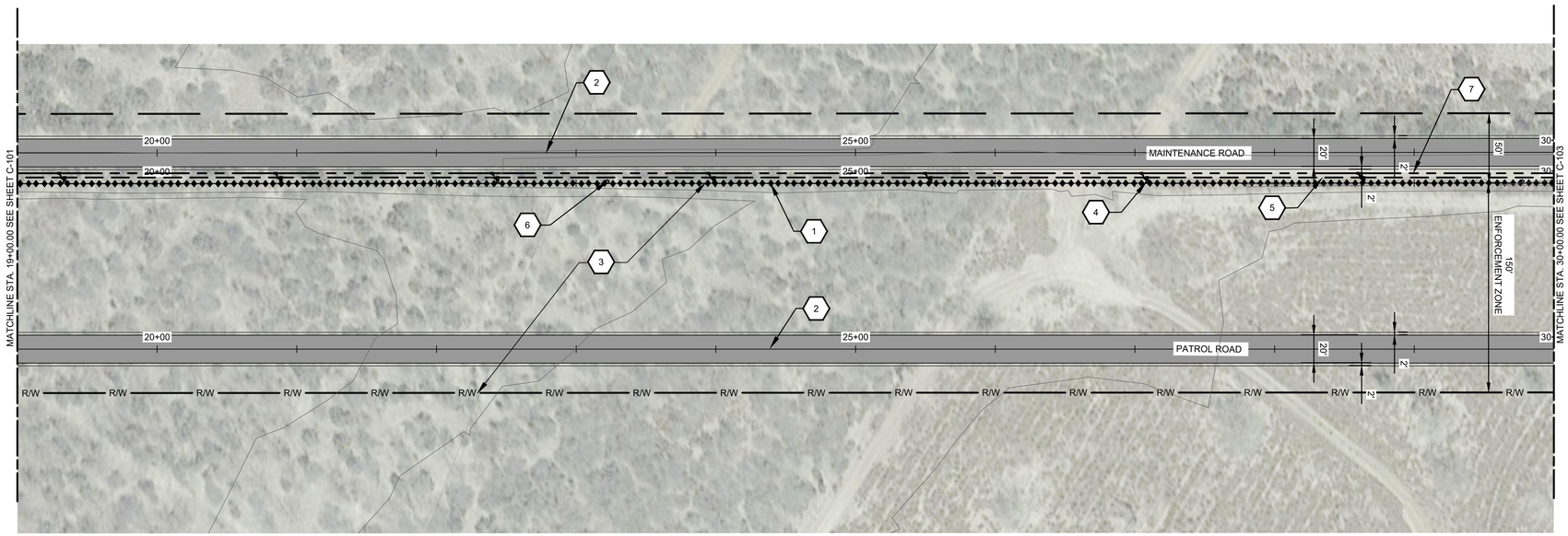
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

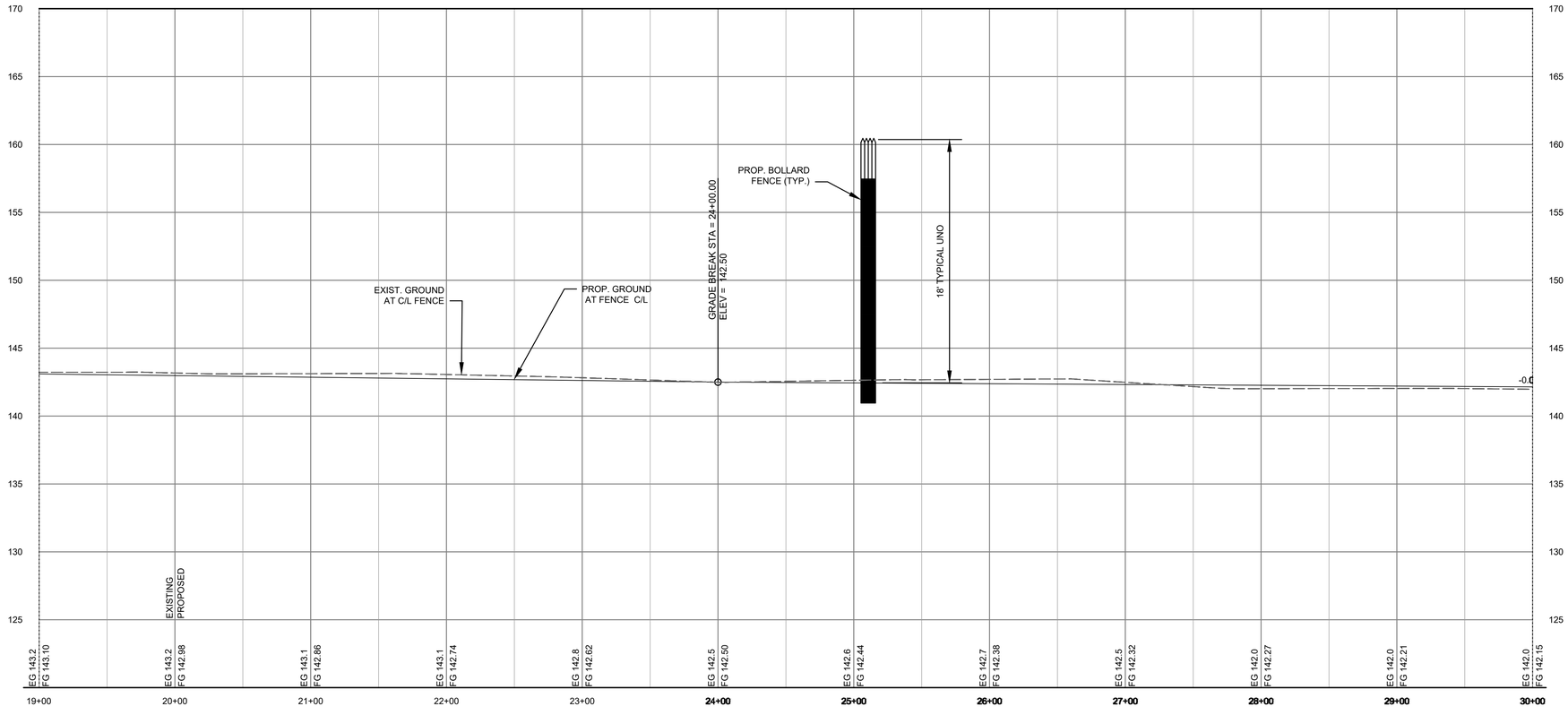
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 10+00.00 - 19+00.00

SHEET ID
LAGRULLA
C-101




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

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US Army Corps of Engineers ®

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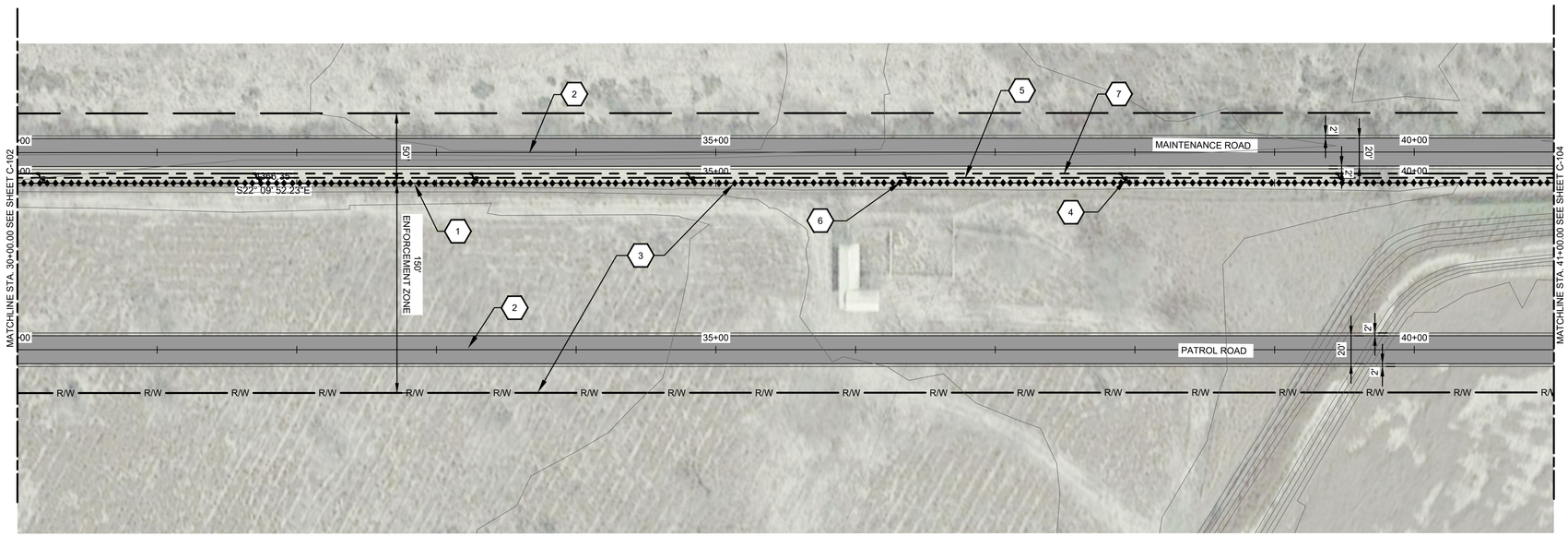
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

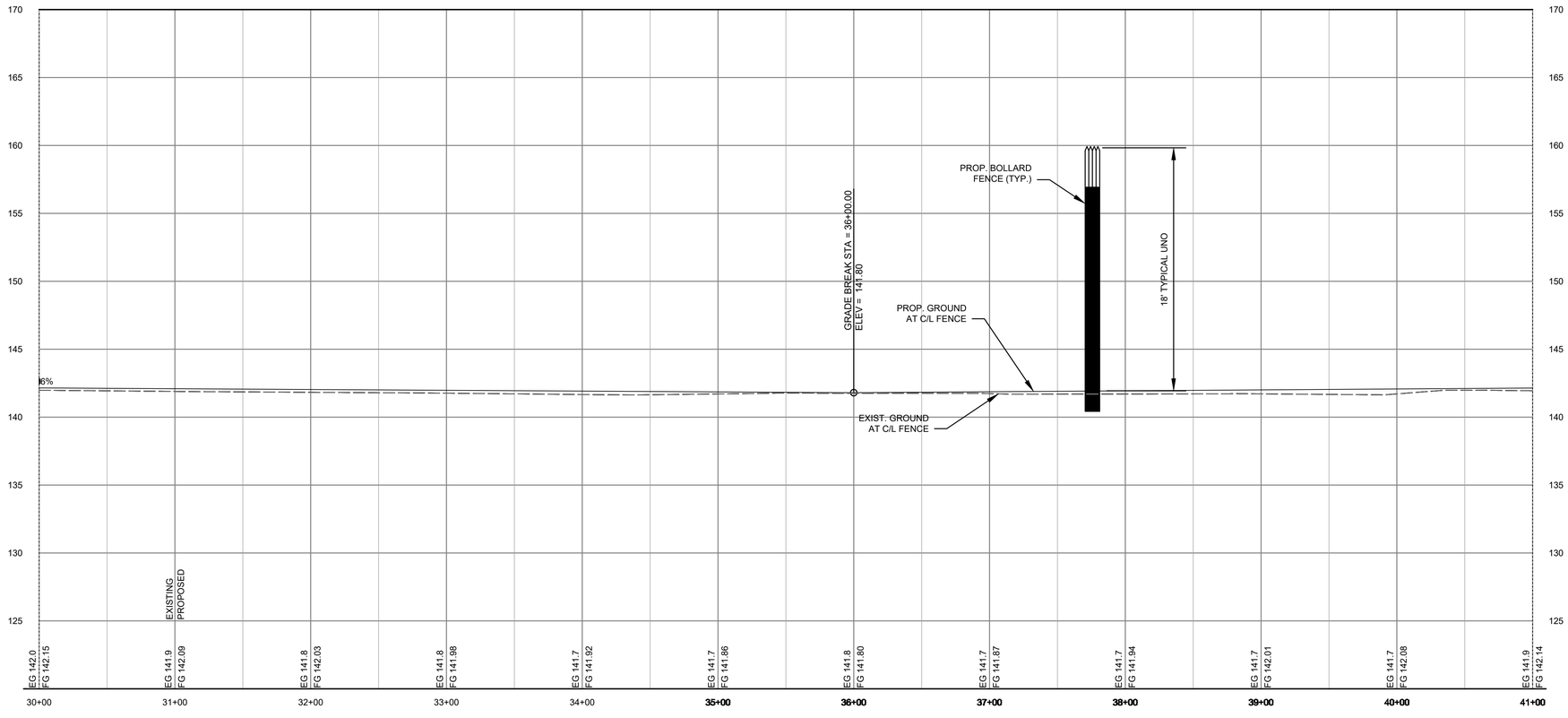
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 19+00.00 - 30+00.00

SHEET ID
LAGRULLA
C-102




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

0 50 100 1' = 50' - 0"
0 5 10 1' = 5' - 0"

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US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
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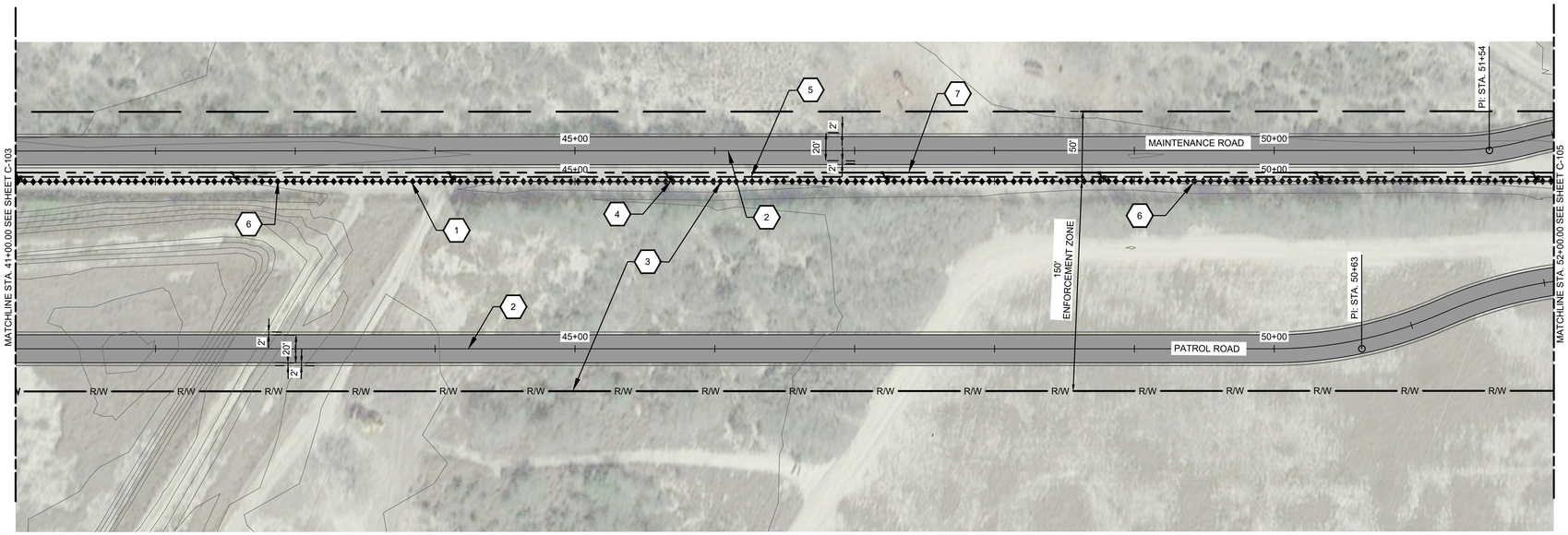
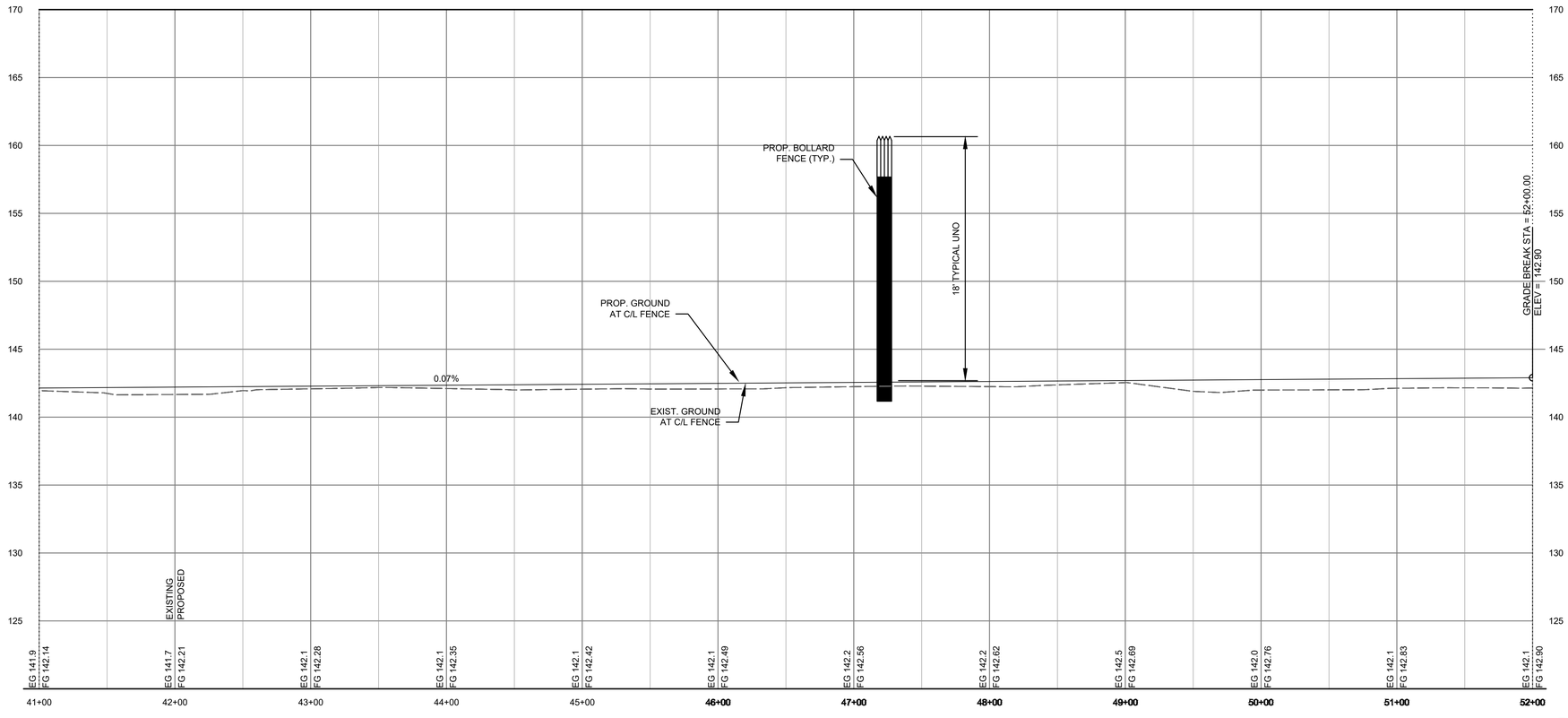
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 30+00.00 - 41+00.00

SHEET ID
LAGRULLA
C-103




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

1' = 50' - 0"  1' = 5' - 0"

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US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
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ETEGRA
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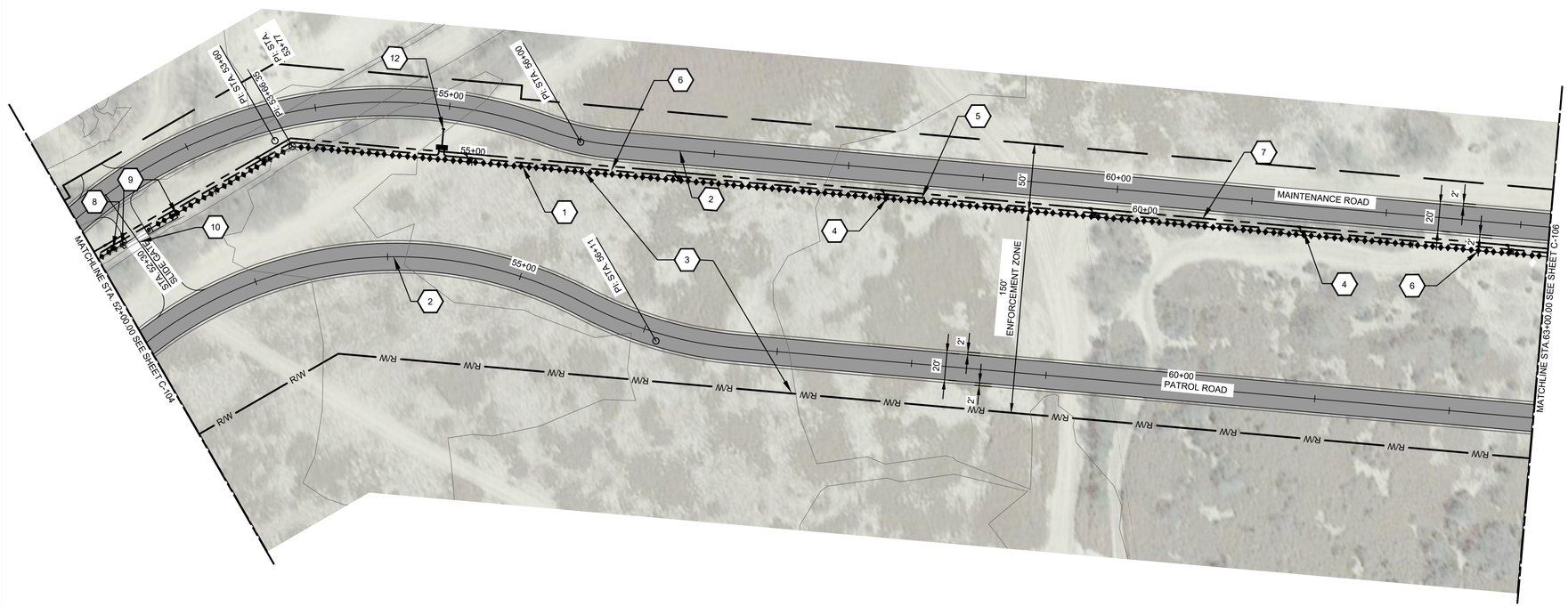
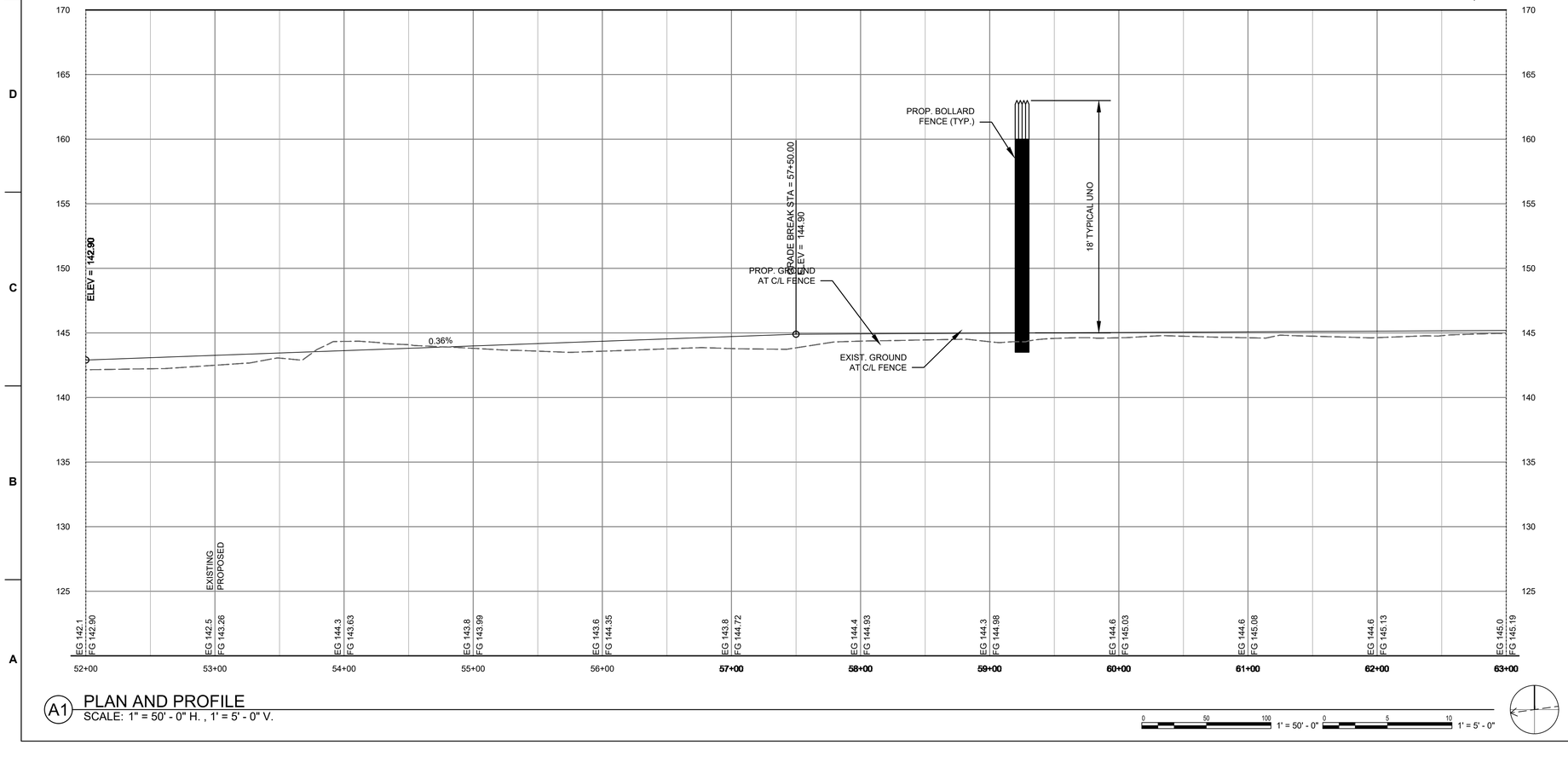
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 41+00.00 - 52+00.00

SHEET ID
LAGRULLA
C-104




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

0 50 100 1' = 50' - 0"
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US Army Corps of Engineers ®

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| CHECKED BY: | X |
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US ARMY CORPS OF ENGINEERS
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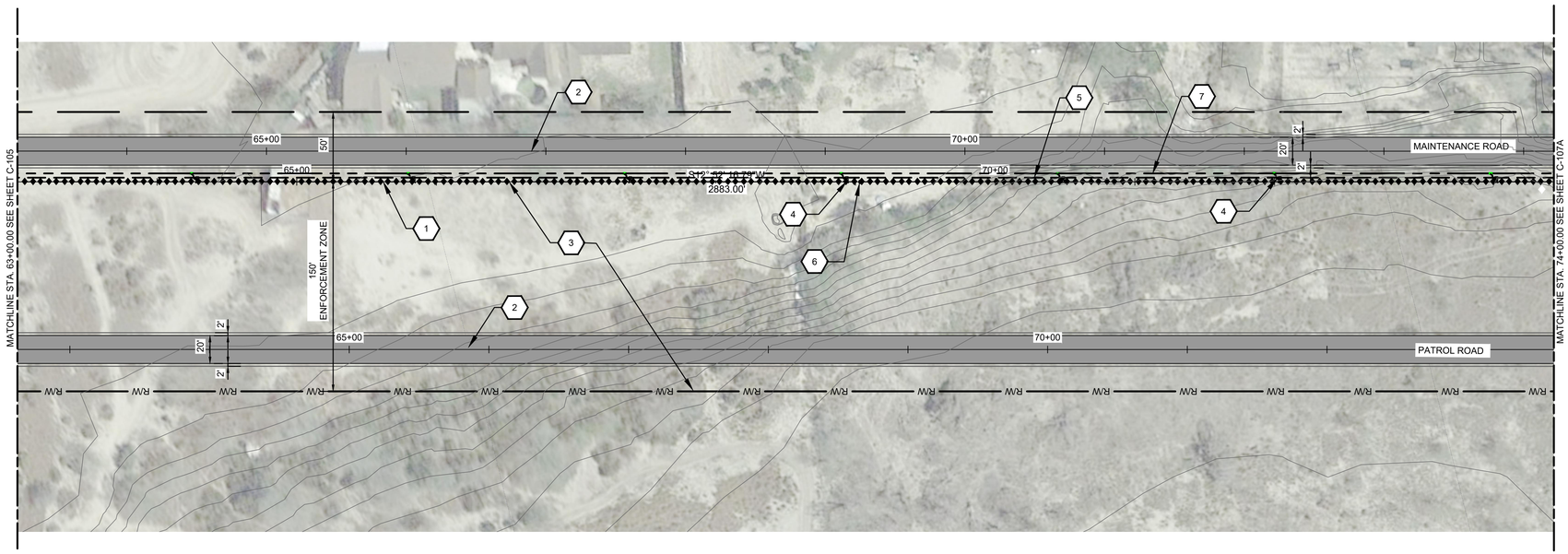
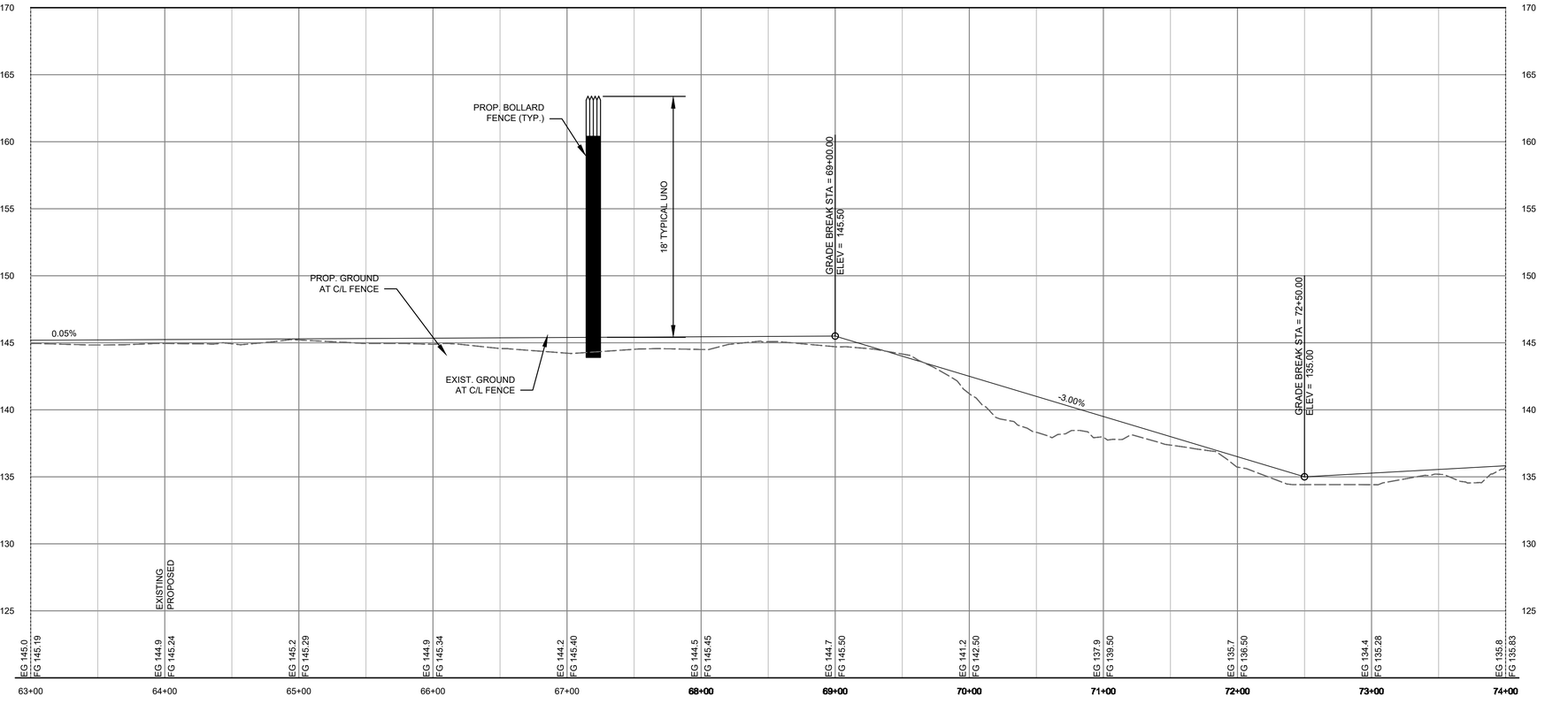
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 52+00.00 - 63+00.00

SHEET ID
LAGRULLA
C-105




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

0 50 100 1' = 50' - 0"  0 5 10 1' = 5' - 0"

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## XX KEYNOTES

1. PROPOSED NEW TYPE P-3 BOLLARD FENCE.
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9. GATE GROUNDING LOCATION
10. PROPOSED MOTORIZED VEHICLE SLIDE GATE.
11. PROPOSED RVSS SITE.
12. CONCEPTUAL ELECTRICAL UTILITY CONNECTION POINT.
13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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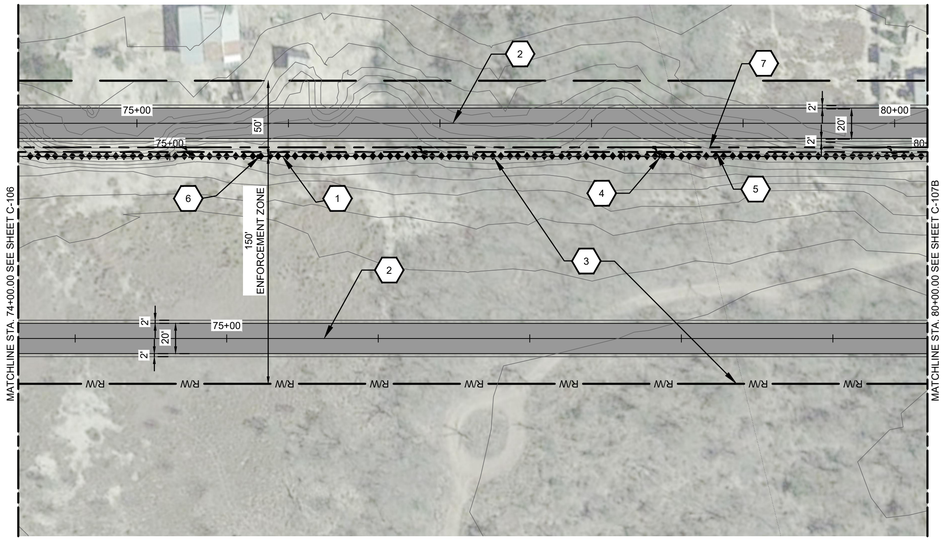
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

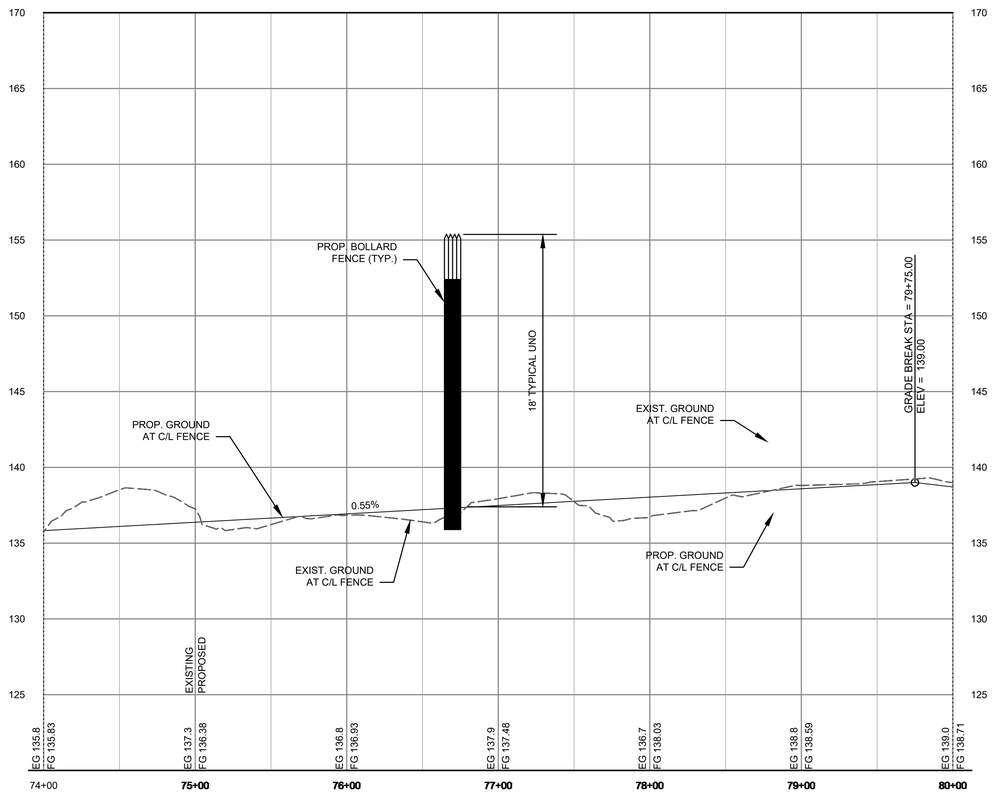
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 63+00.00 - 74+00.00

SHEET ID
LAGRULLA
C-106

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RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 74+00.00 - 80+00.00

SHEET ID
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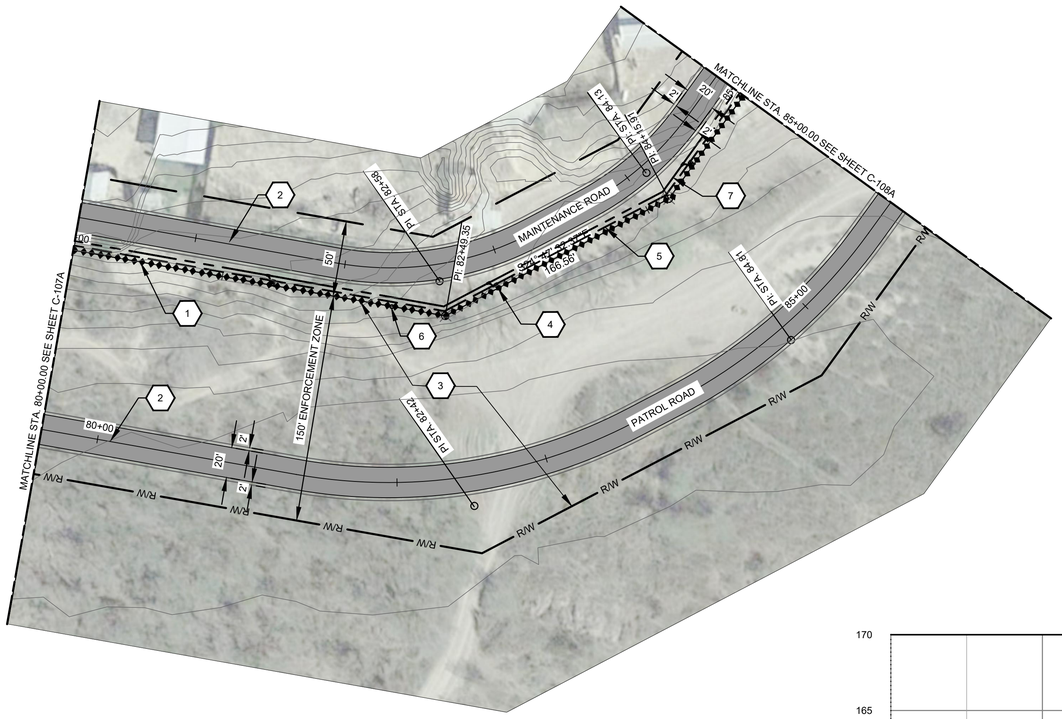
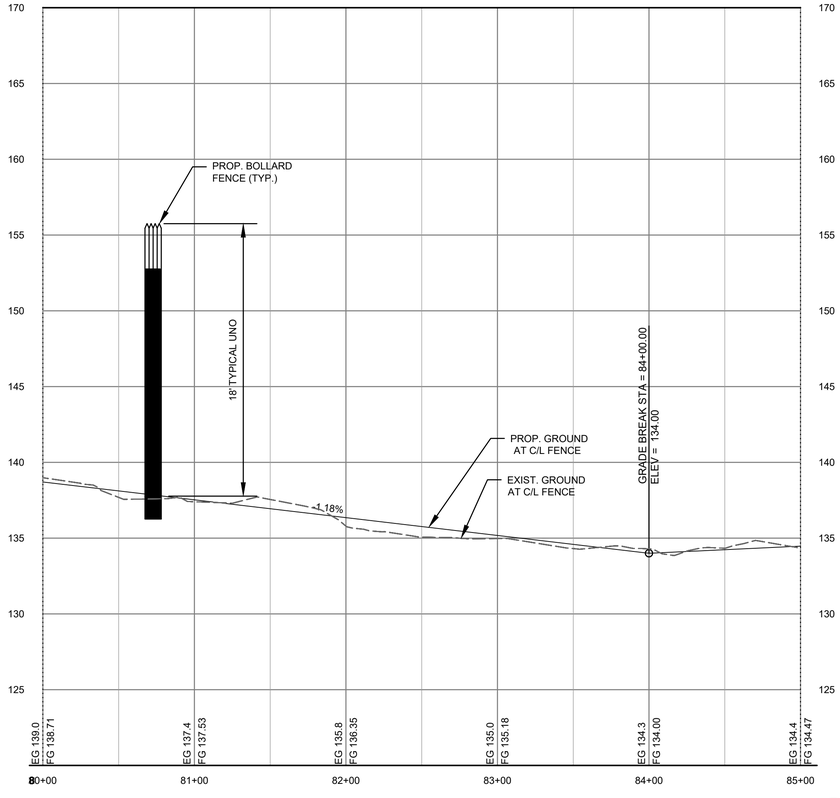
C-107A

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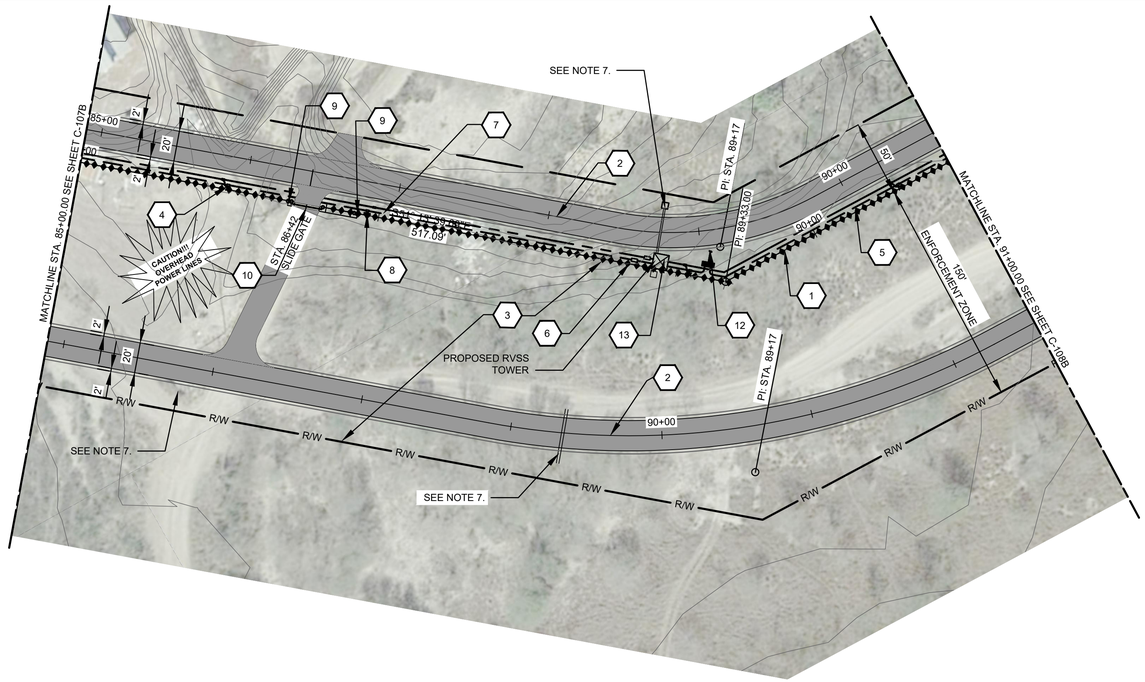
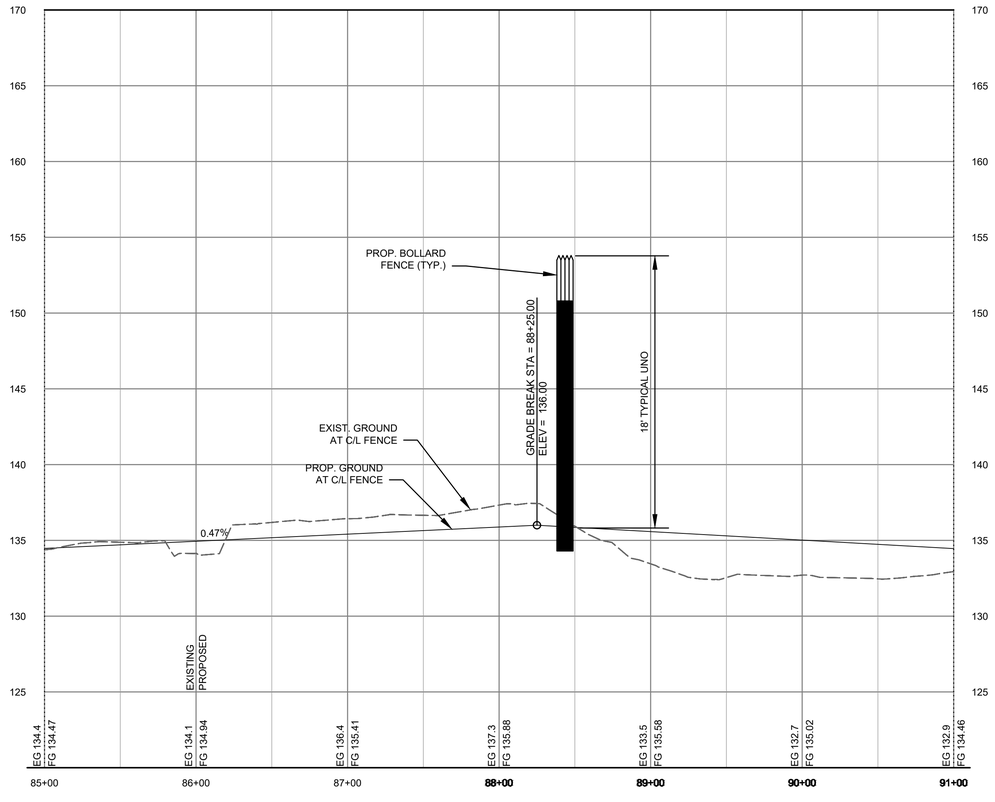
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 80+00.00 - 85+00.00

SHEET ID
LAGRULLA
C-107B

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7. SEE SHEET E-502 FOR TYPICAL PLAN VIEW AT RVSS TOWER.

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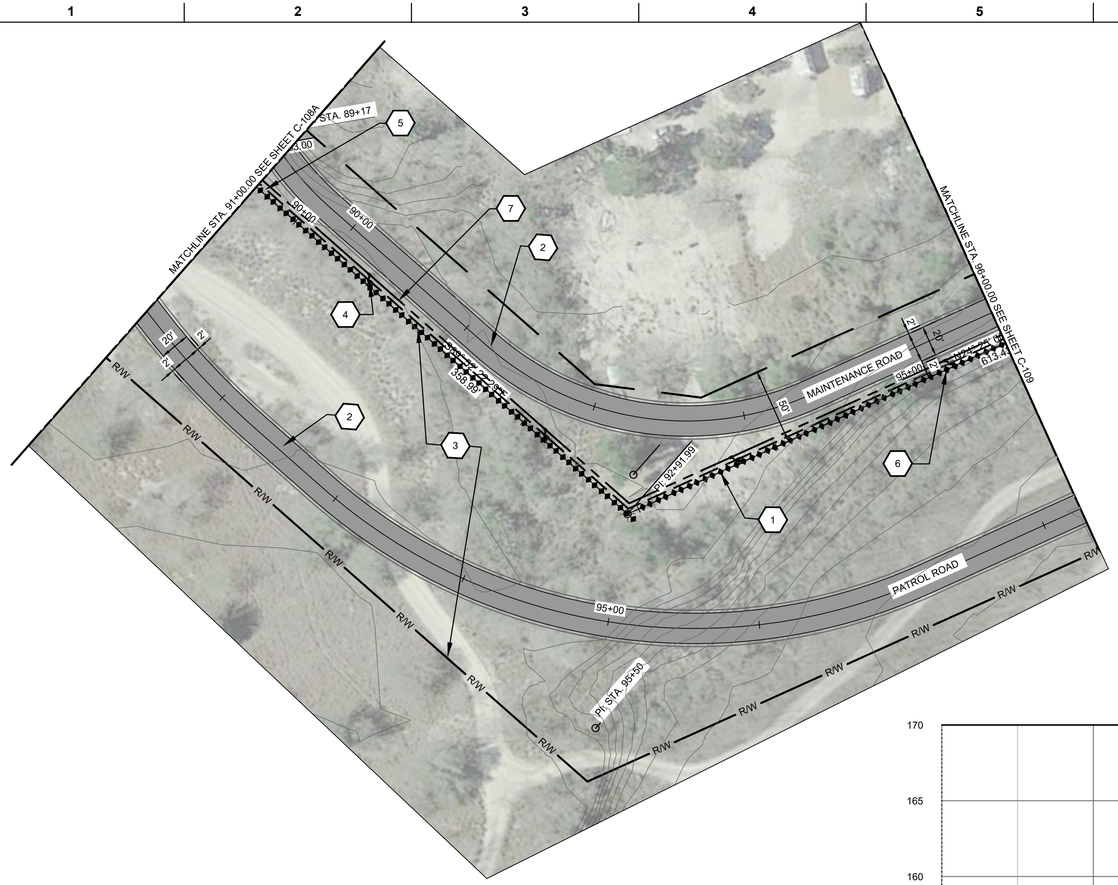
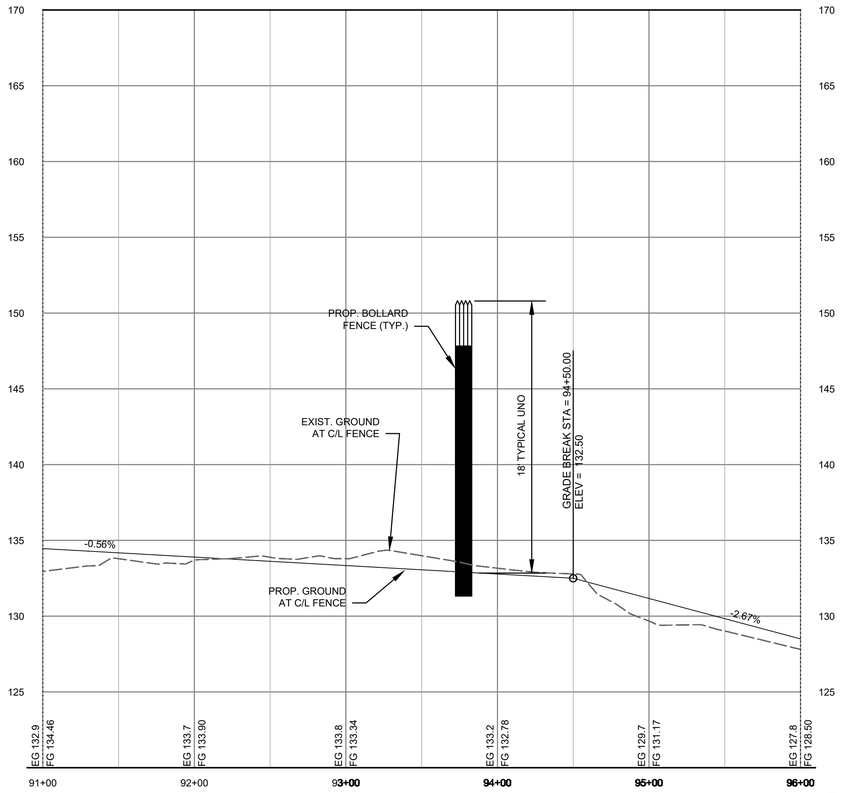
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 85+00.00 - 91+00.00

SHEET ID
LAGRULLA
C-108A

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US Army Corps of Engineers ®

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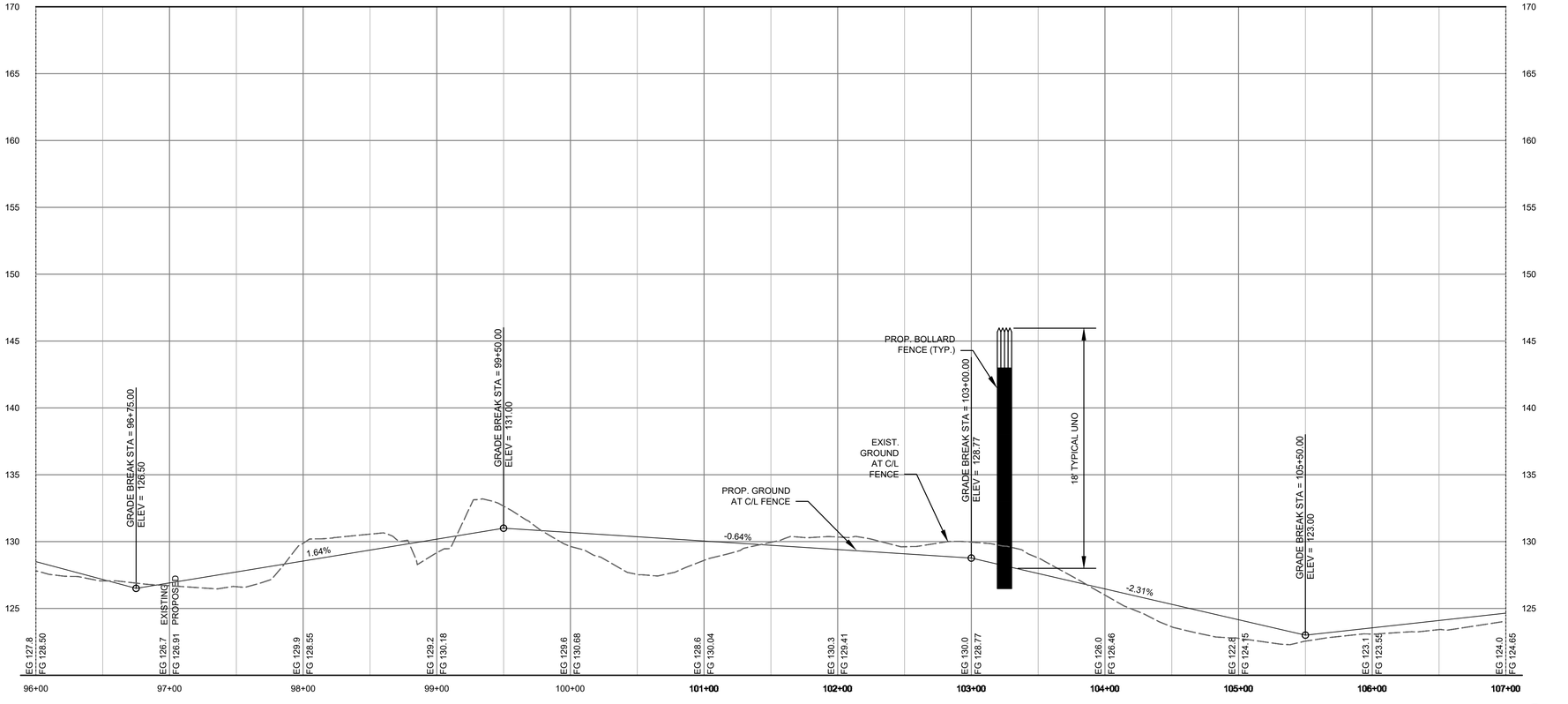
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 91+00.00 - 96+00.00

SHEET ID
LAGRULLA
C-108B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US Army Corps of Engineers ®

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RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 96+00.00 - 107+00.00

SHEET ID
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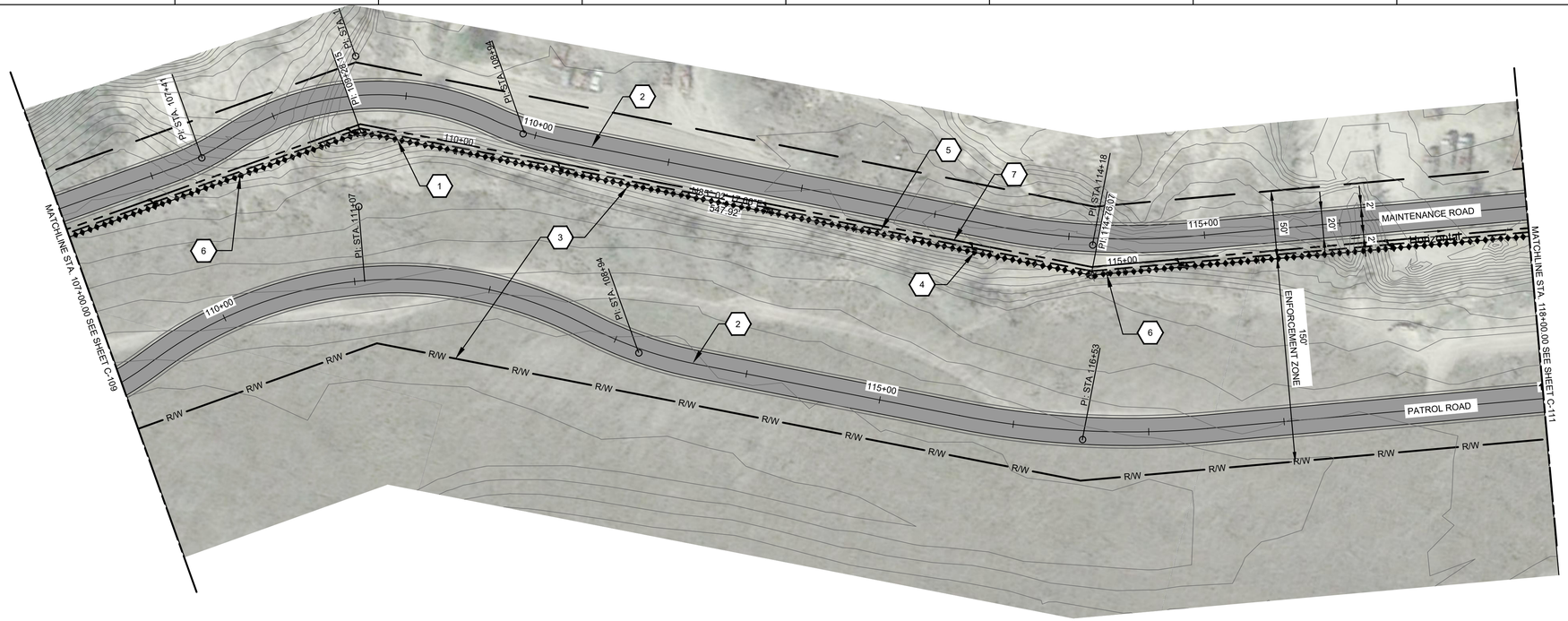


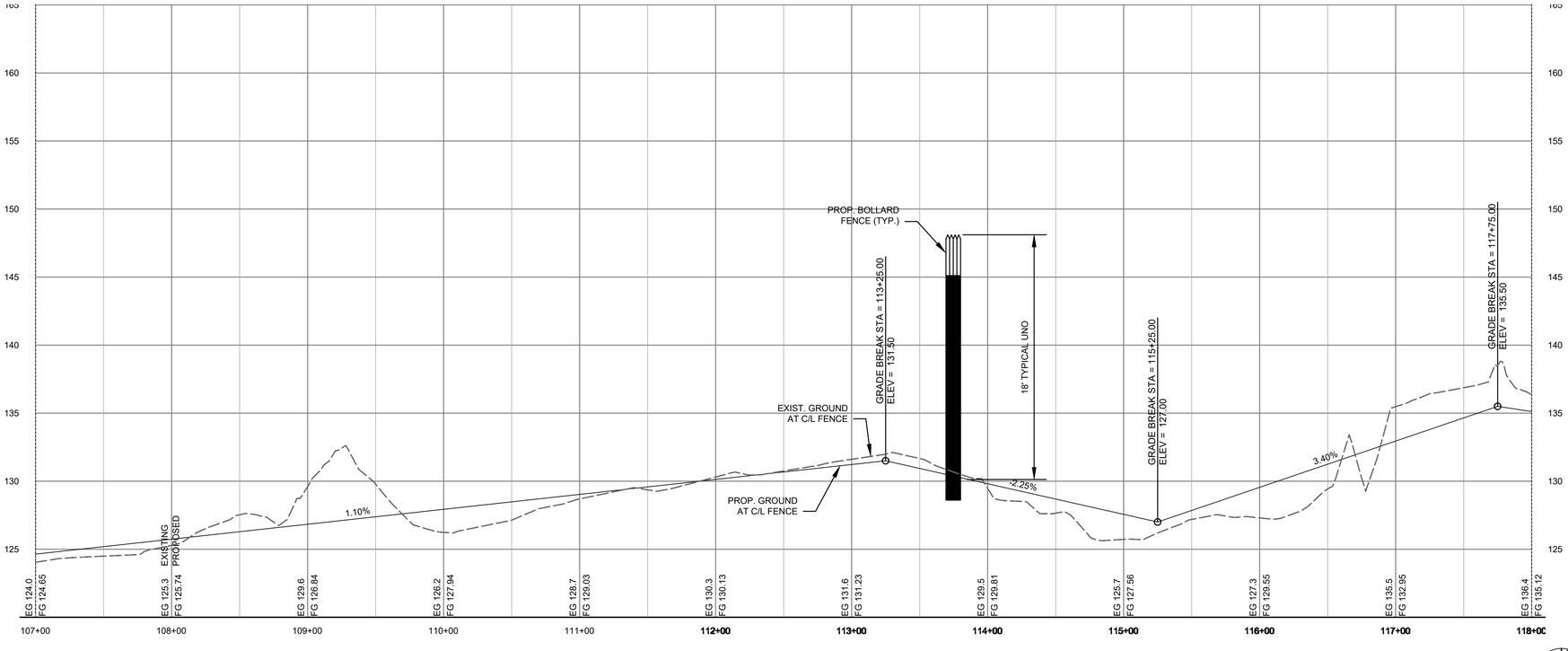


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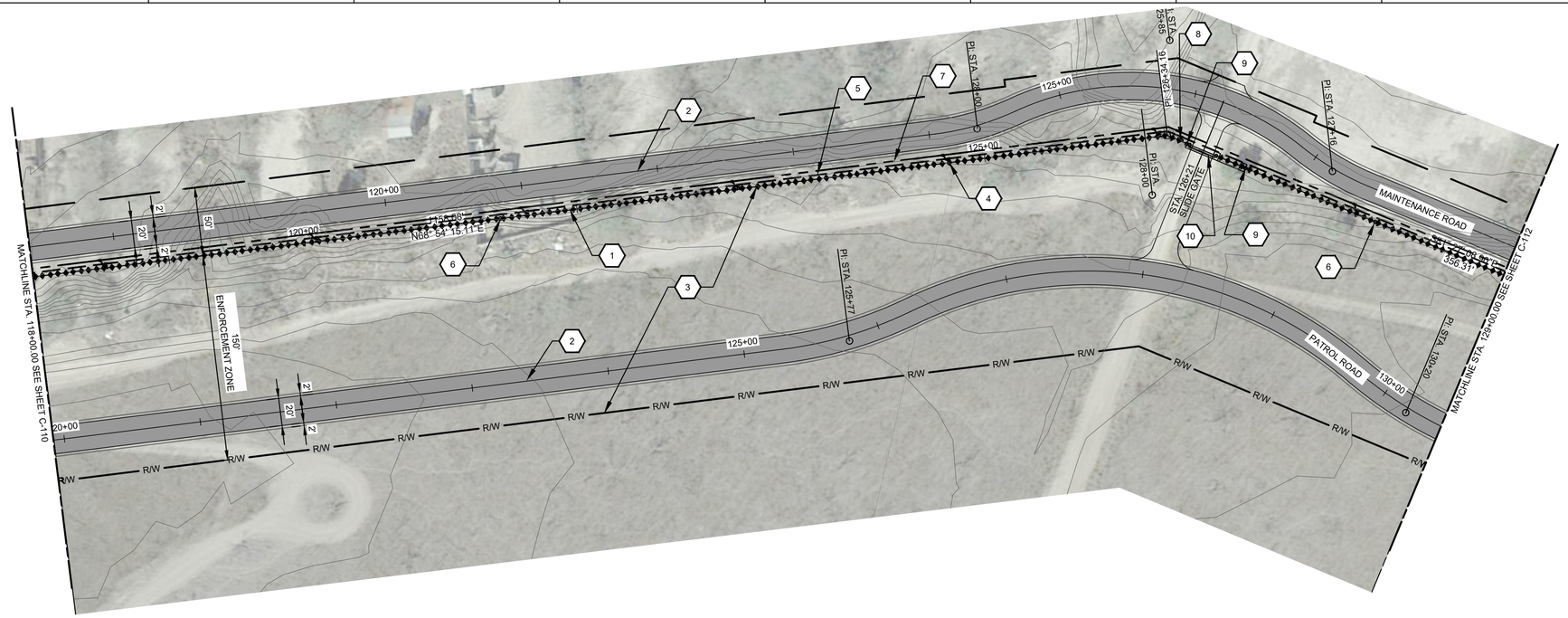
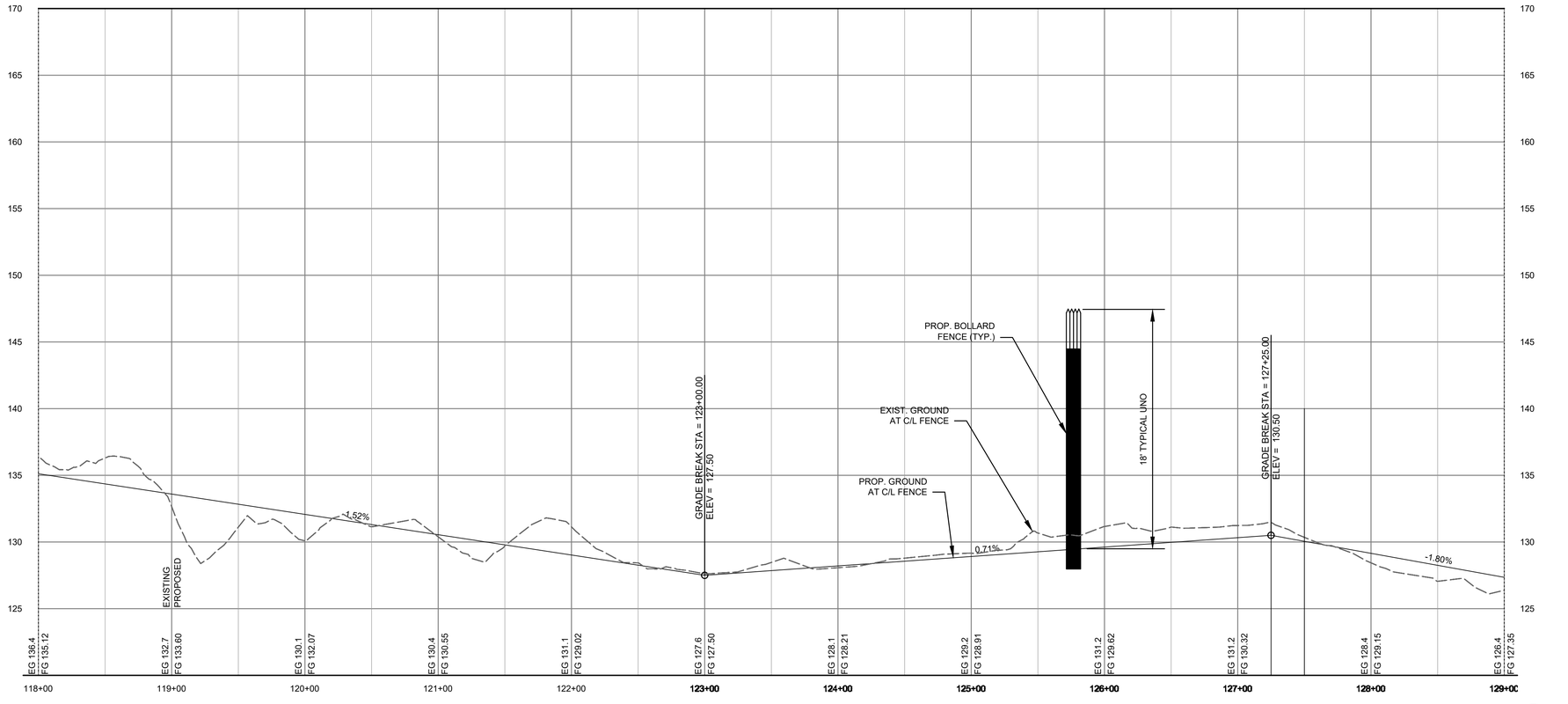
PLAN AND PROFILE
STA. 107+00.00 - 118+00.00

SHEET ID
LAGRULLA
C-110




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

0 50 100 1" = 50' - 0"  0 5 10 1' = 5' - 0"

## GENERAL NOTES

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3. CONTRACTOR SHALL ENSURE THAT ALL DESIGNS MEET TACTICAL INFRASTRUCTURE STANDARDS, LATEST EDITION.
4. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES, IRRIGATION CULVERTS AND DRAINAGE STRUCTURES, AND ADJUST/RELOCATE AS REQUIRED TO DE-CONFLICT WITH THE PROPOSED BOLLARD FENCE AND ENFORCEMENT ZONE (I.E.: EX. IRRIGATION VALVES TO BE RELOCATED TO NORTH LEVEE EMBANKMENT).
5. CONTRACTOR SHALL DESIGN AND INSTALL ALL DRAINAGE SYSTEMS FOR THIS PROJECT.
6. LIGHTING LOCATIONS ARE CONCEPTUAL. CONTRACTOR TO PROVIDE FINAL LIGHTING COMPUTATIONS AND LOCATIONS.

## KEYNOTES

1. PROPOSED NEW TYPE P-3 BOLLARD FENCE.
2. PROPOSED TYPE FC-2 AGGREGATE ALL-WEATHER ROAD.
3. CLEAR VEGETATION AND GRADE WITHIN ENFORCEMENT ZONE.
4. PROPOSED LIGHT POLE, PULLBOX, AND LIGHTING - SEE ELEC. FOR LOCATIONS (TYP).
5. PROPOSED POWER AND LIGHTING DISTRIBUTION CABLE AND CONDUIT/ DUCT BANK.
6. PROPOSED FENCE GROUNDING LOCATION.
7. PROPOSED COMMUNICATION CONDUIT/ DUCTBANK. (CABLE FUTURE BY OTHERS)
8. GATE ELECTRICAL DISTRIBUTION EQUIPMENT.
9. GATE GROUNDING LOCATION
10. PROPOSED MOTORIZED VEHICLE SLIDE GATE.
11. PROPOSED RVSS SITE.
12. CONCEPTUAL ELECTRICAL UTILITY CONNECTION POINT.
13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

US Army Corps of Engineers ®

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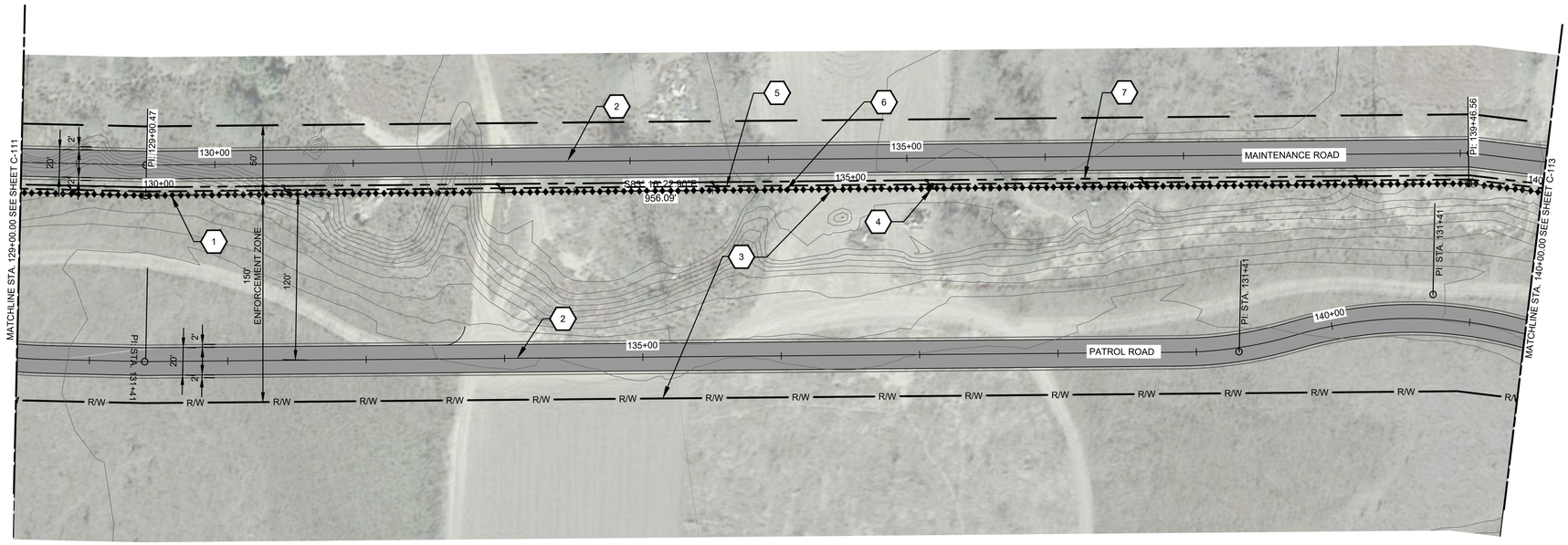
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

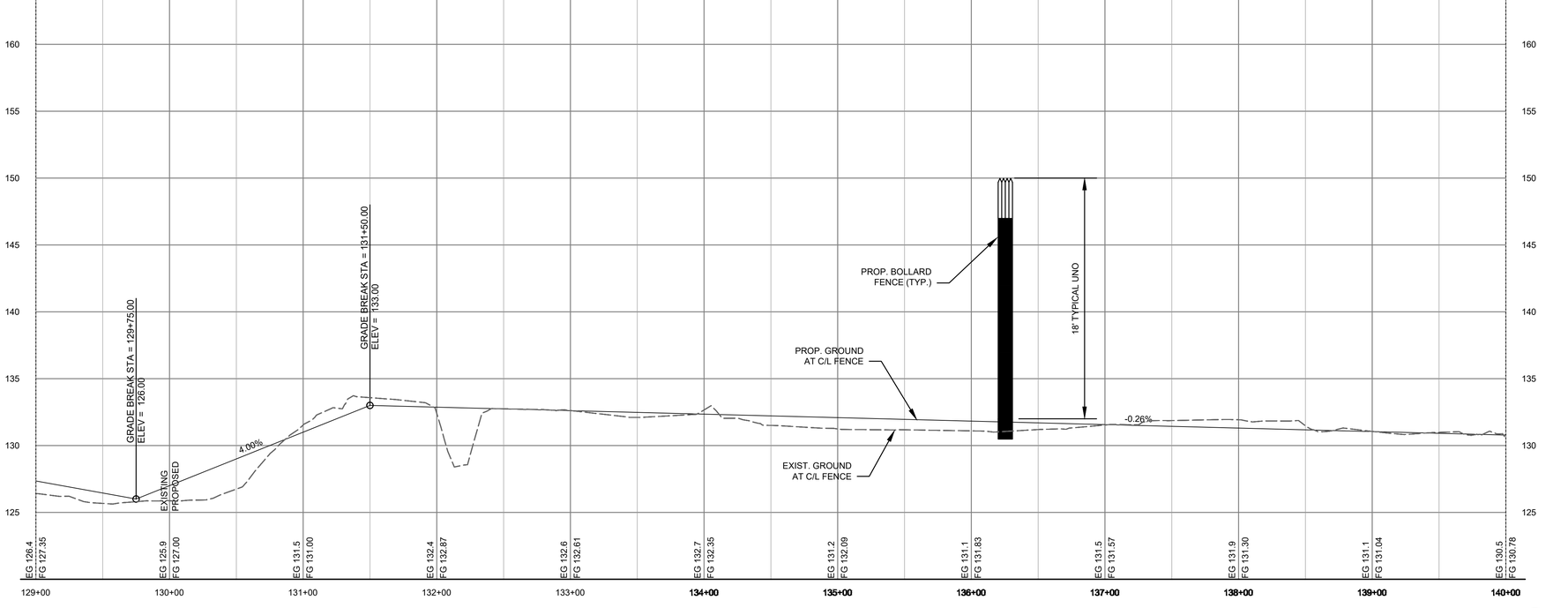
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 118+00.00 - 129+00.00

SHEET ID
LAGRULLA
C-111

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US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
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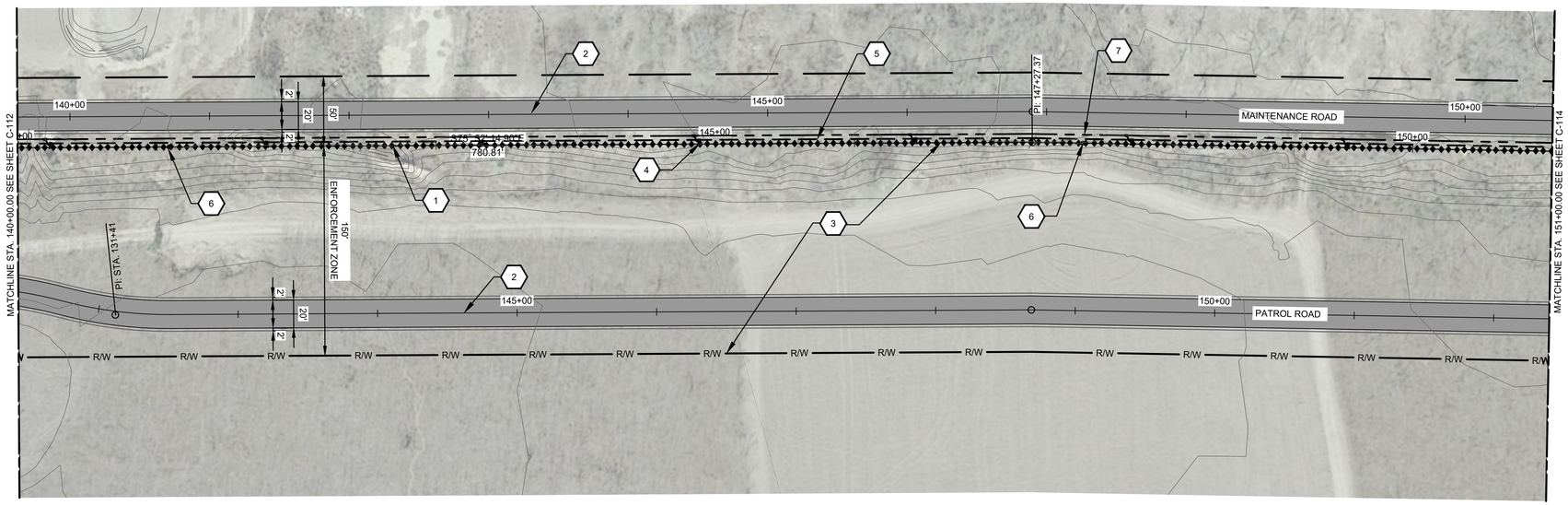
GALVESTON, TX 77553-1229

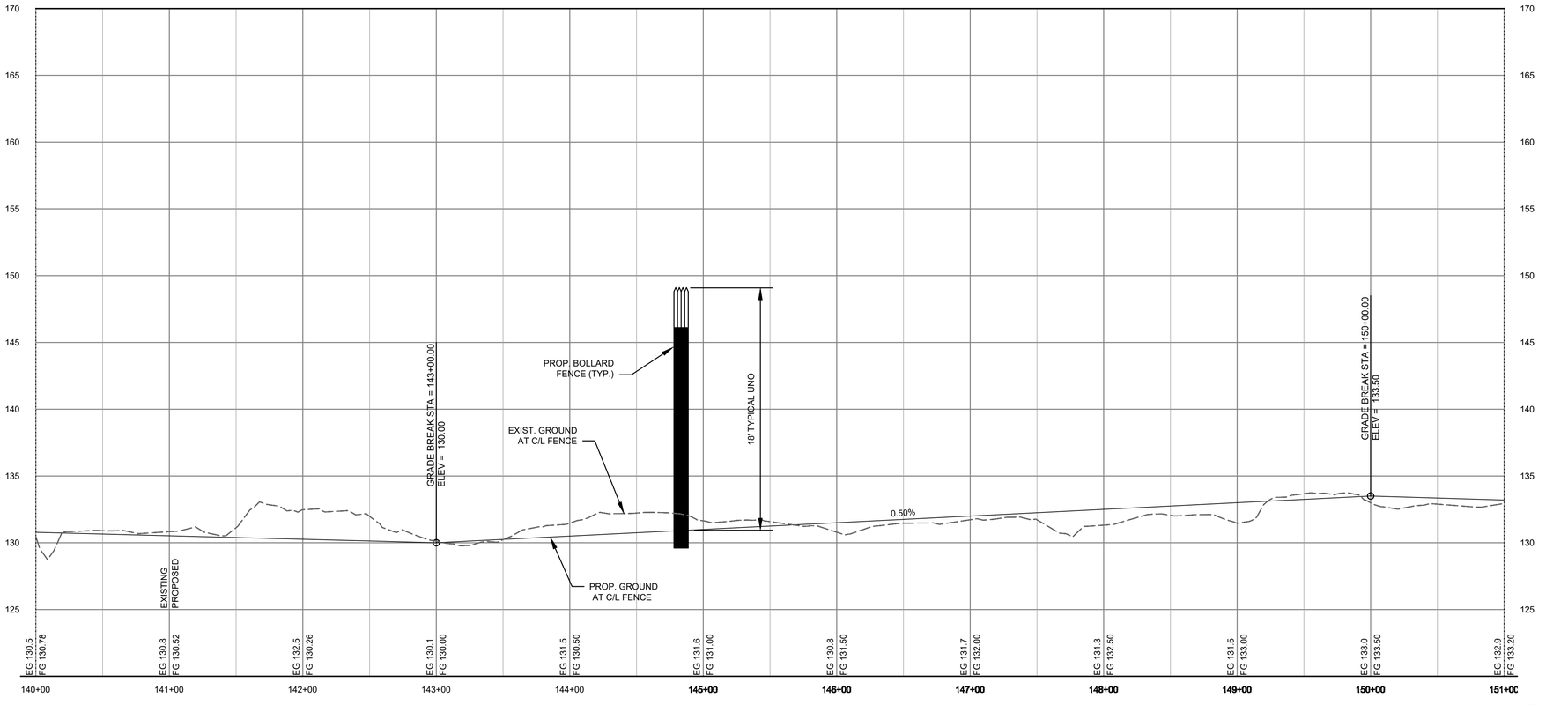
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 129+00.00 - 140+00.00

SHEET ID
LAGRULLA
C-112

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US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
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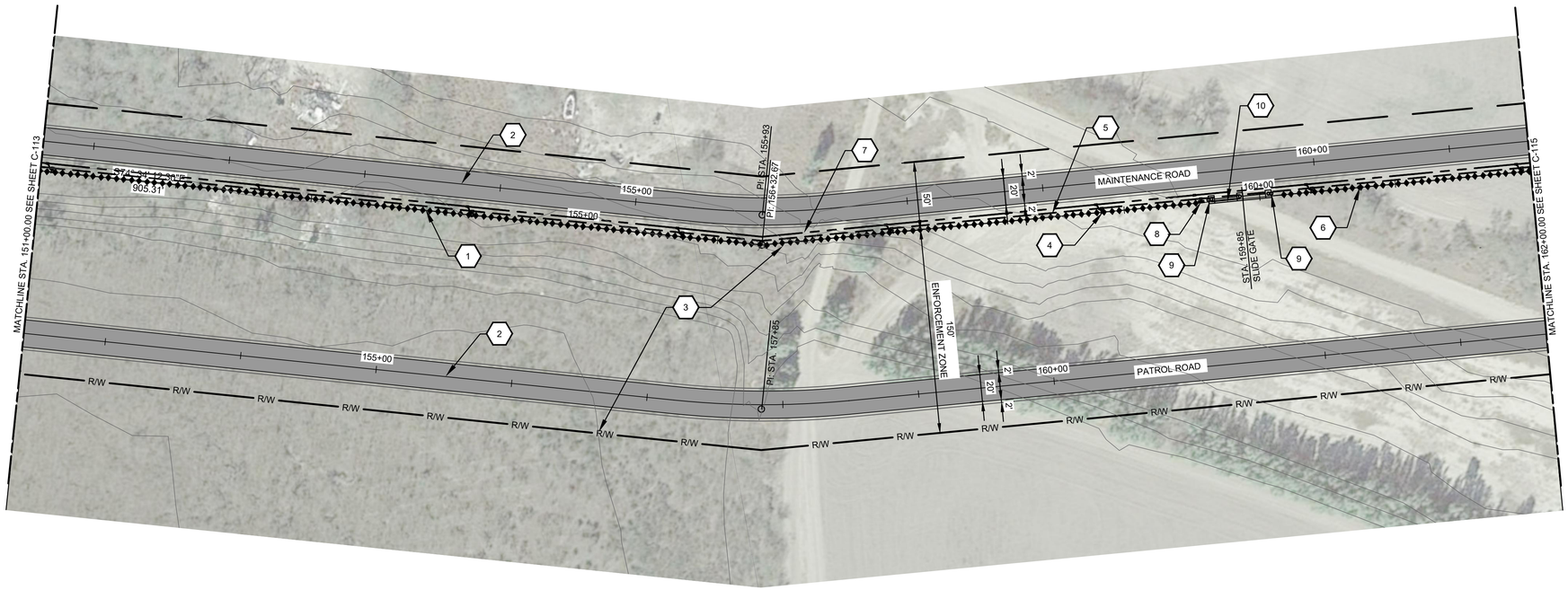
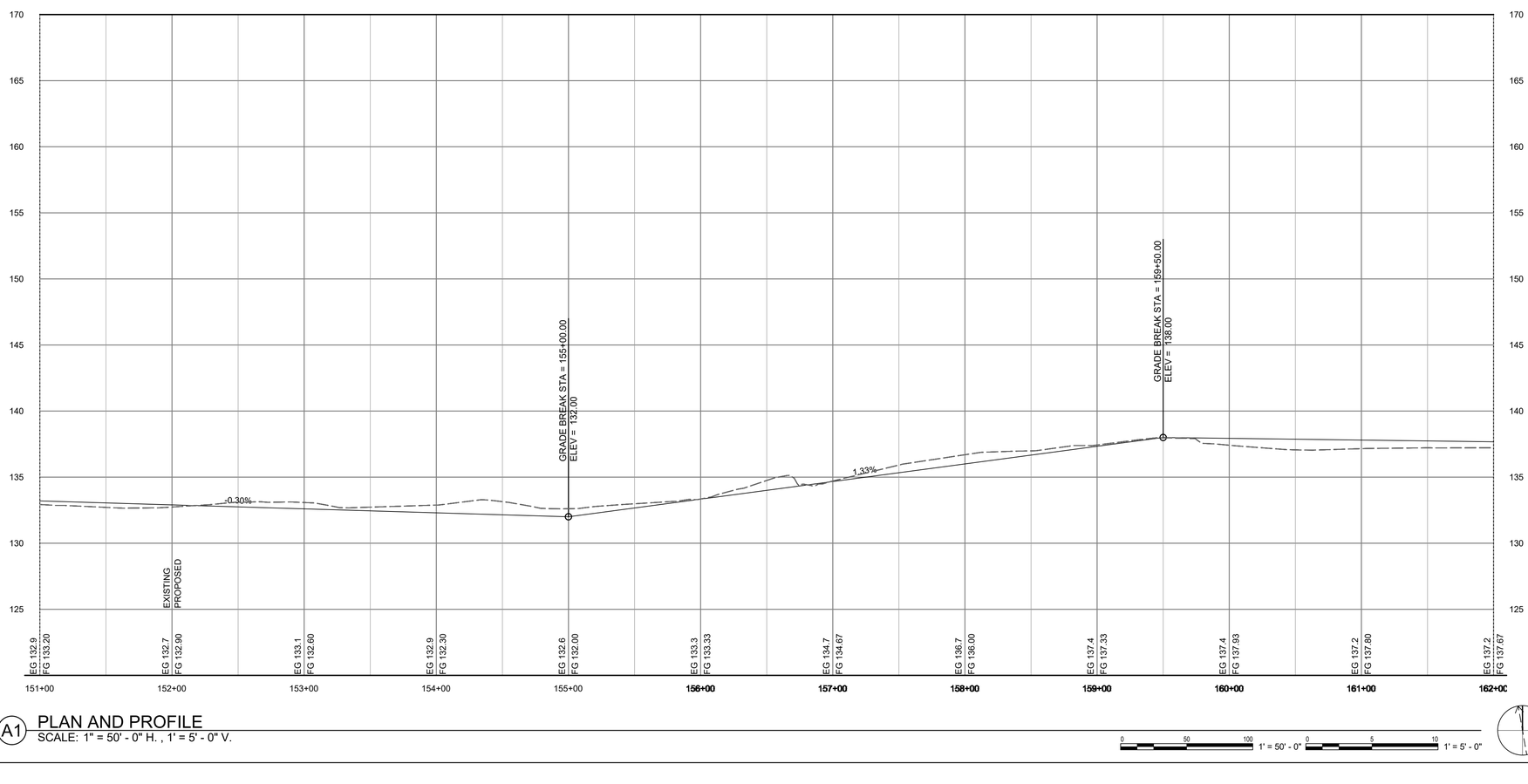
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 140+00.00 - 151+00.00

SHEET ID
LAGRULLA
C-113




A1 PLAN AND PROFILE
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US Army Corps of Engineers ®

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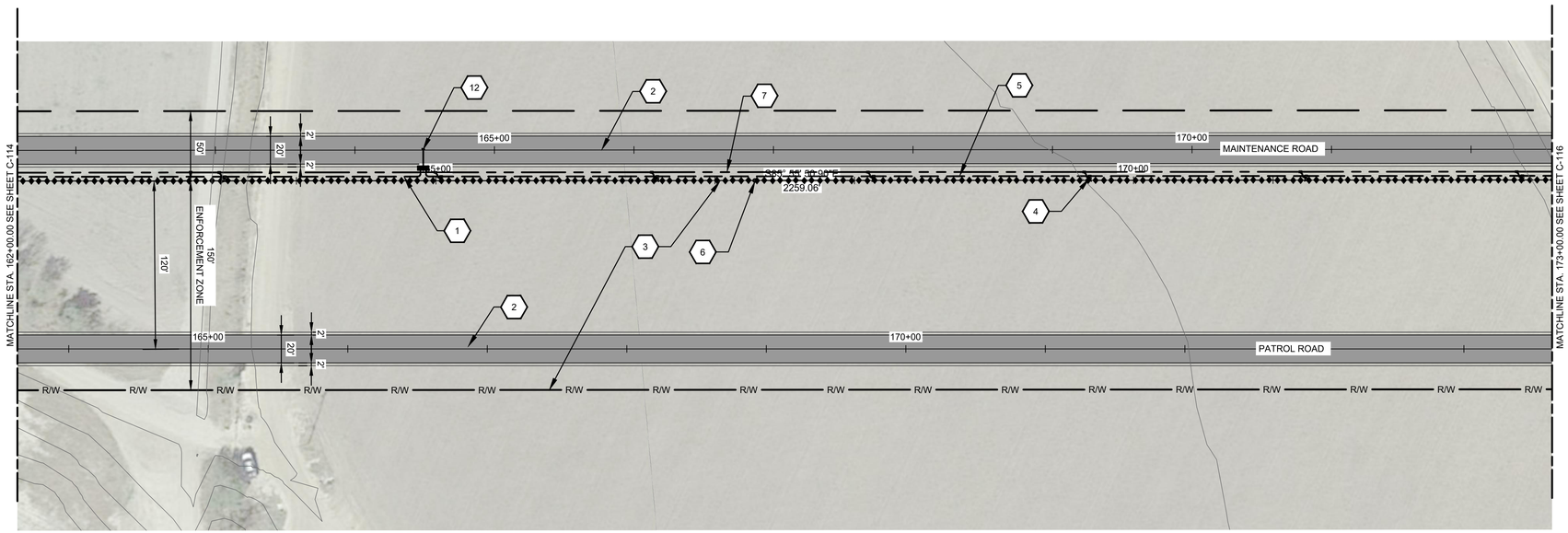
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

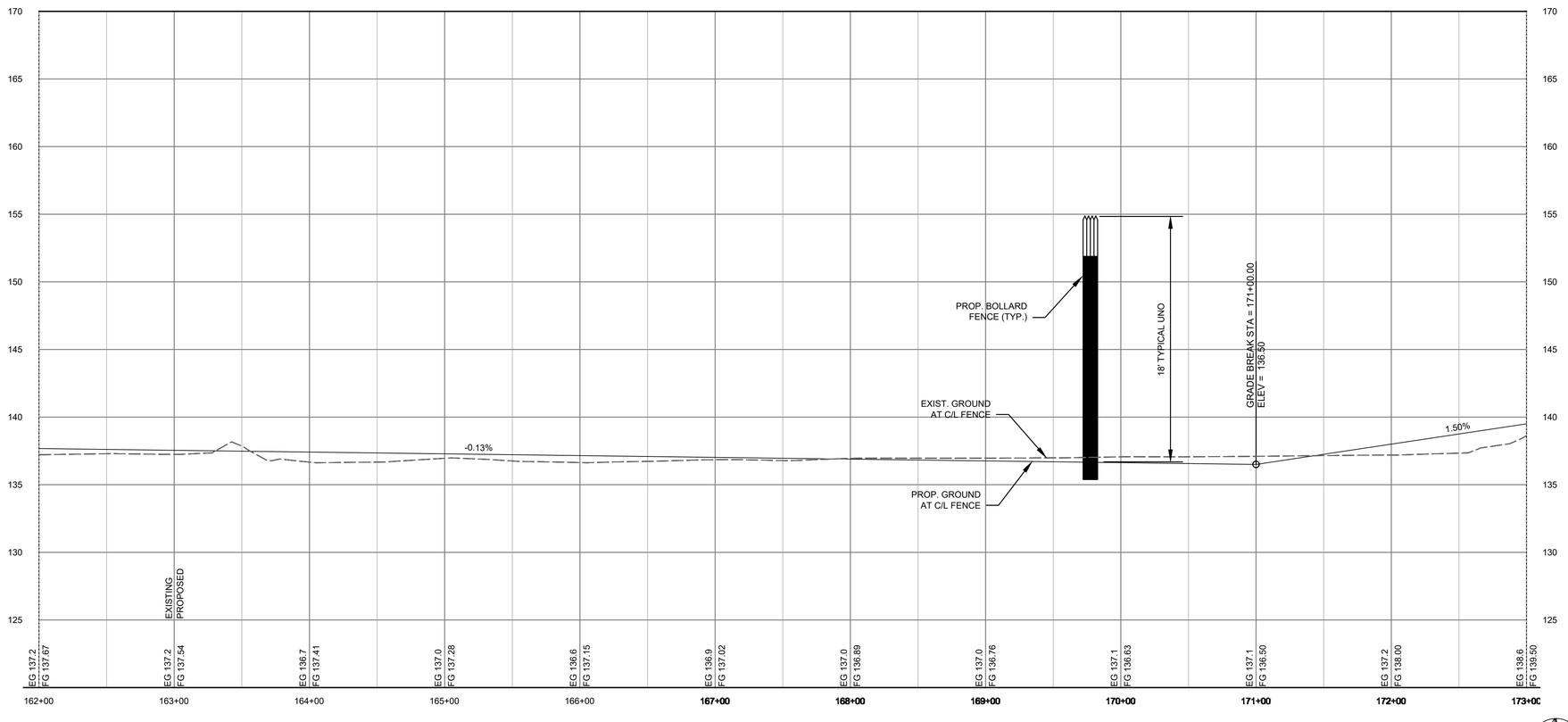
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 151+00.00 - 162+00.00

SHEET ID
LAGRULLA
C-114




A1 PLAN AND PROFILE
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US Army Corps of Engineers ®

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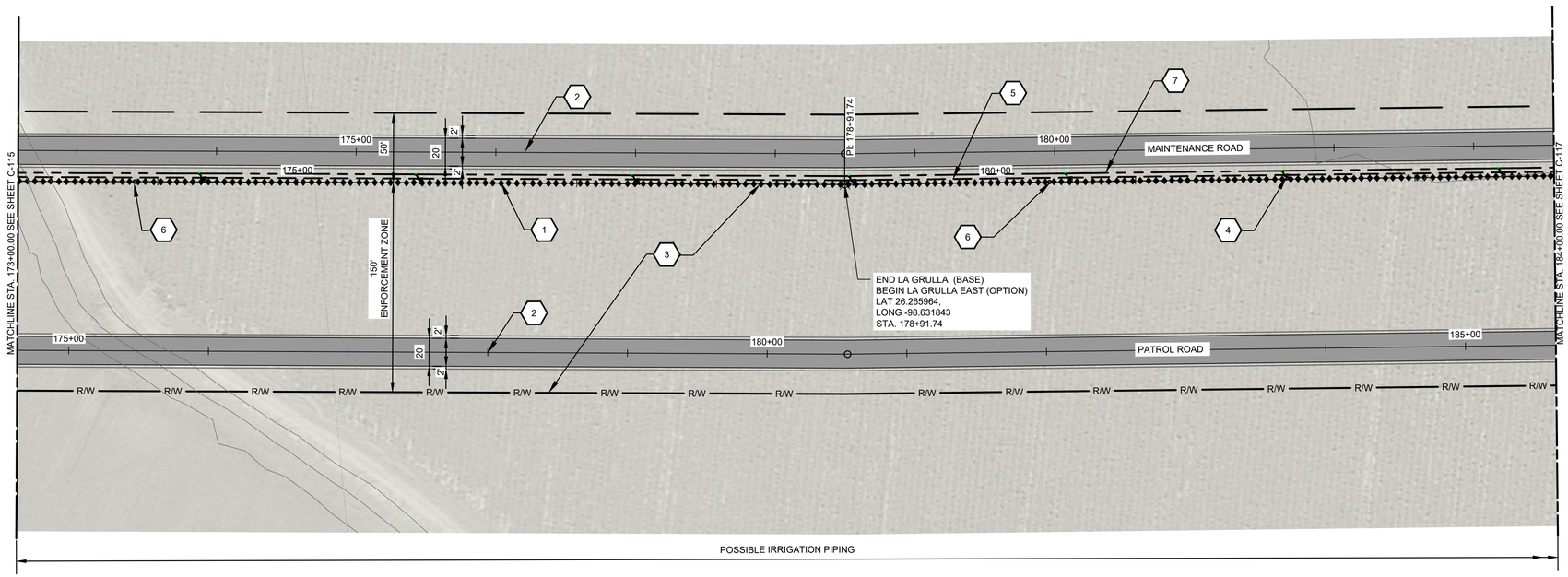
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

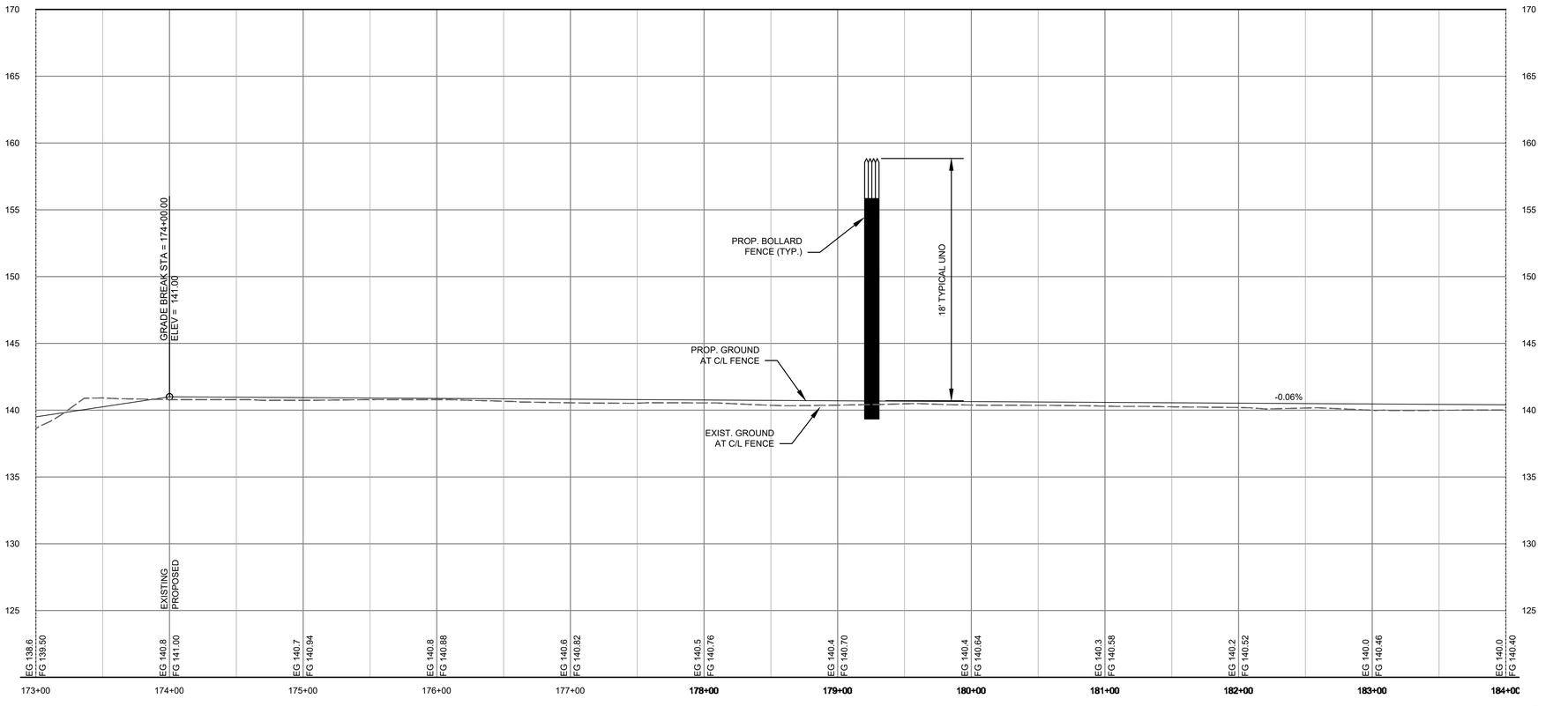
ETEGRA
1718 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 162+00.00 - 173+00.00

SHEET ID
LAGRULLA
C-115

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US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
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2000 FORD POINT ROAD
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ETEGRA
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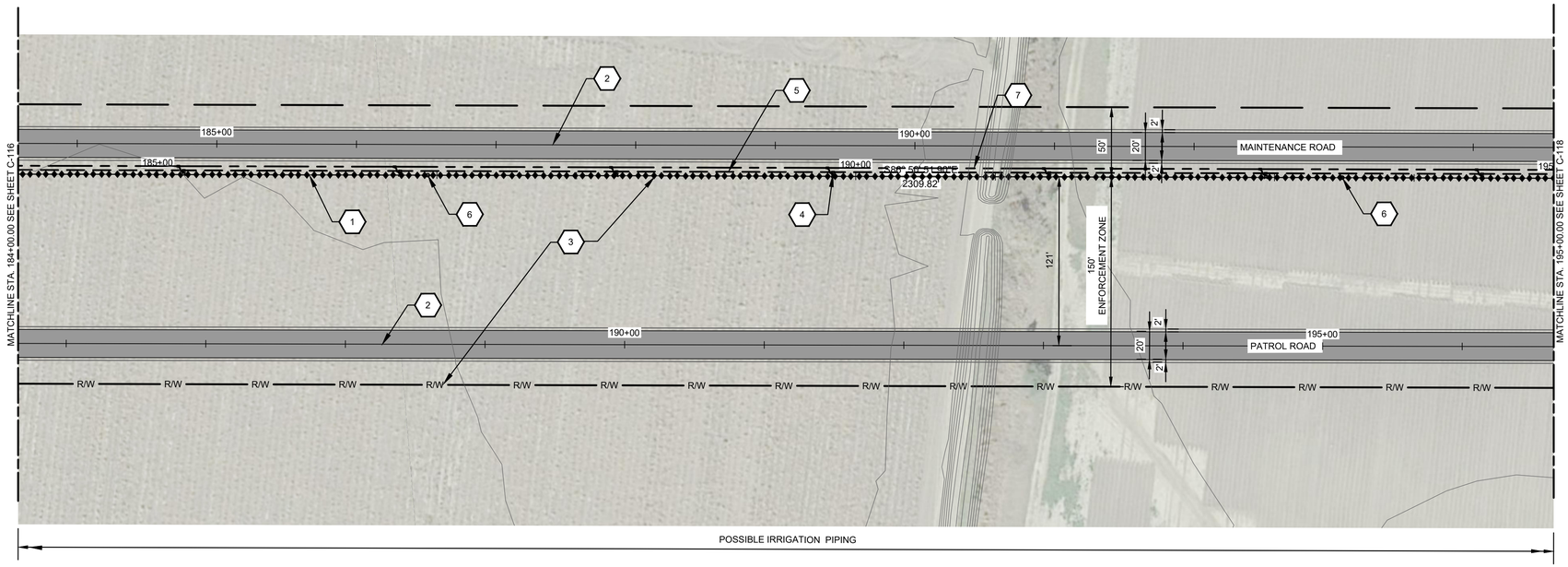
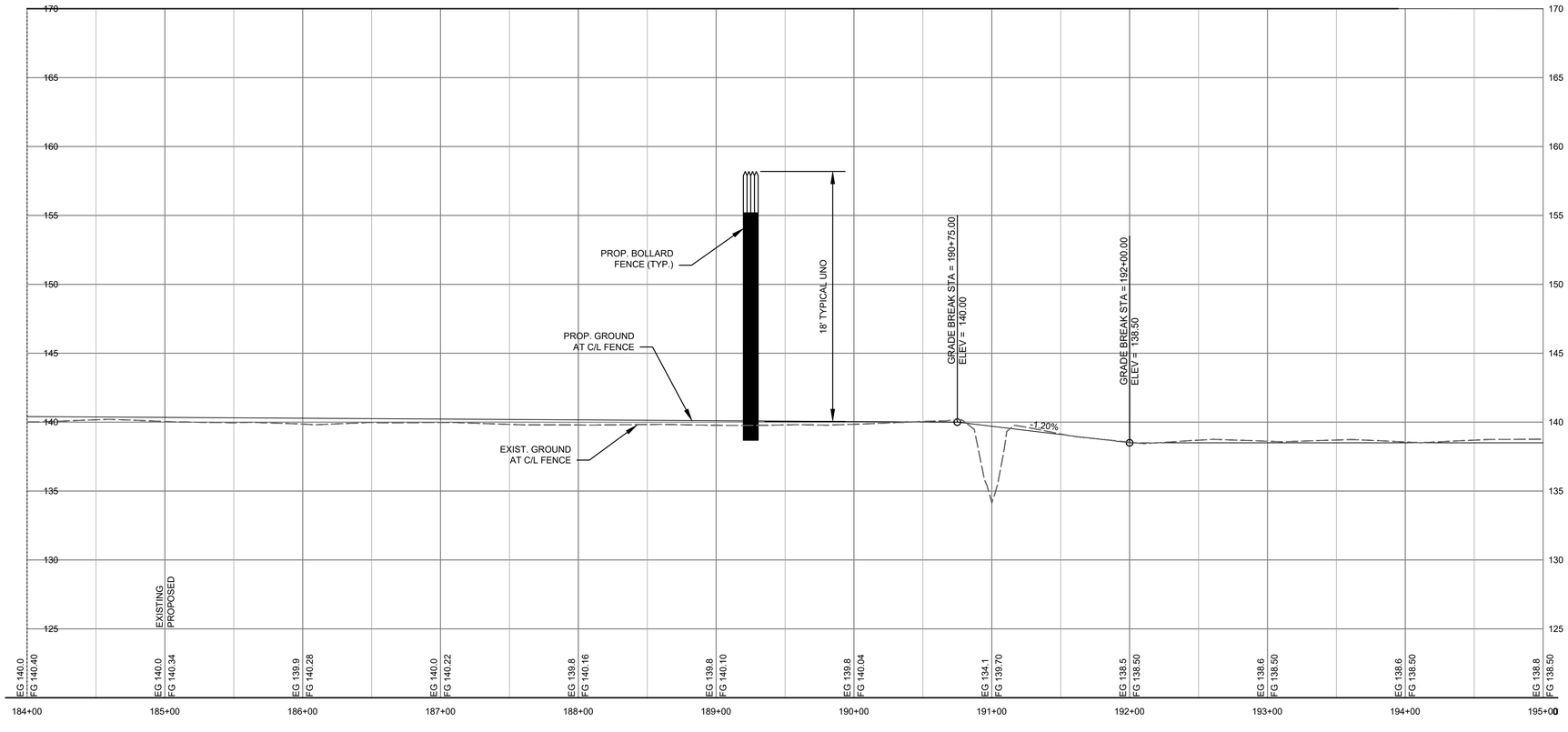
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 173+00.00 - 184+00.00

SHEET ID
LAGRULLA
C-116

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13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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SOLICITATION NO.:
CONTRACT NO.:
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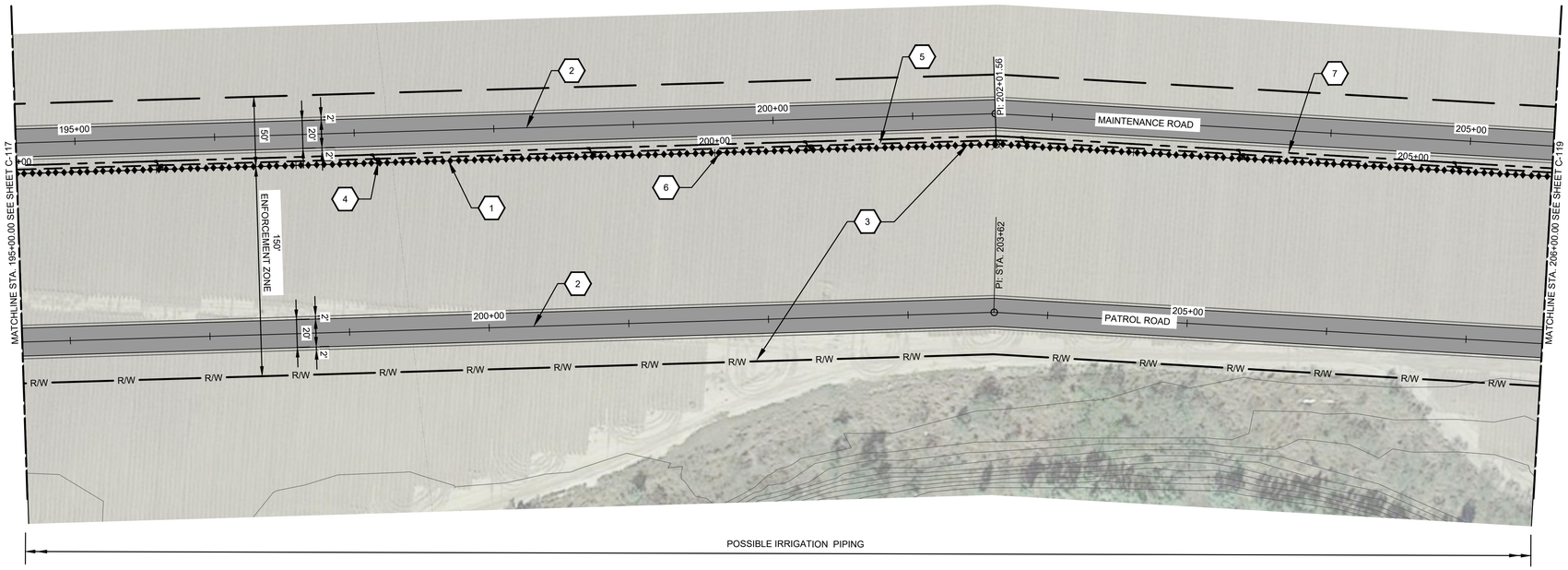
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

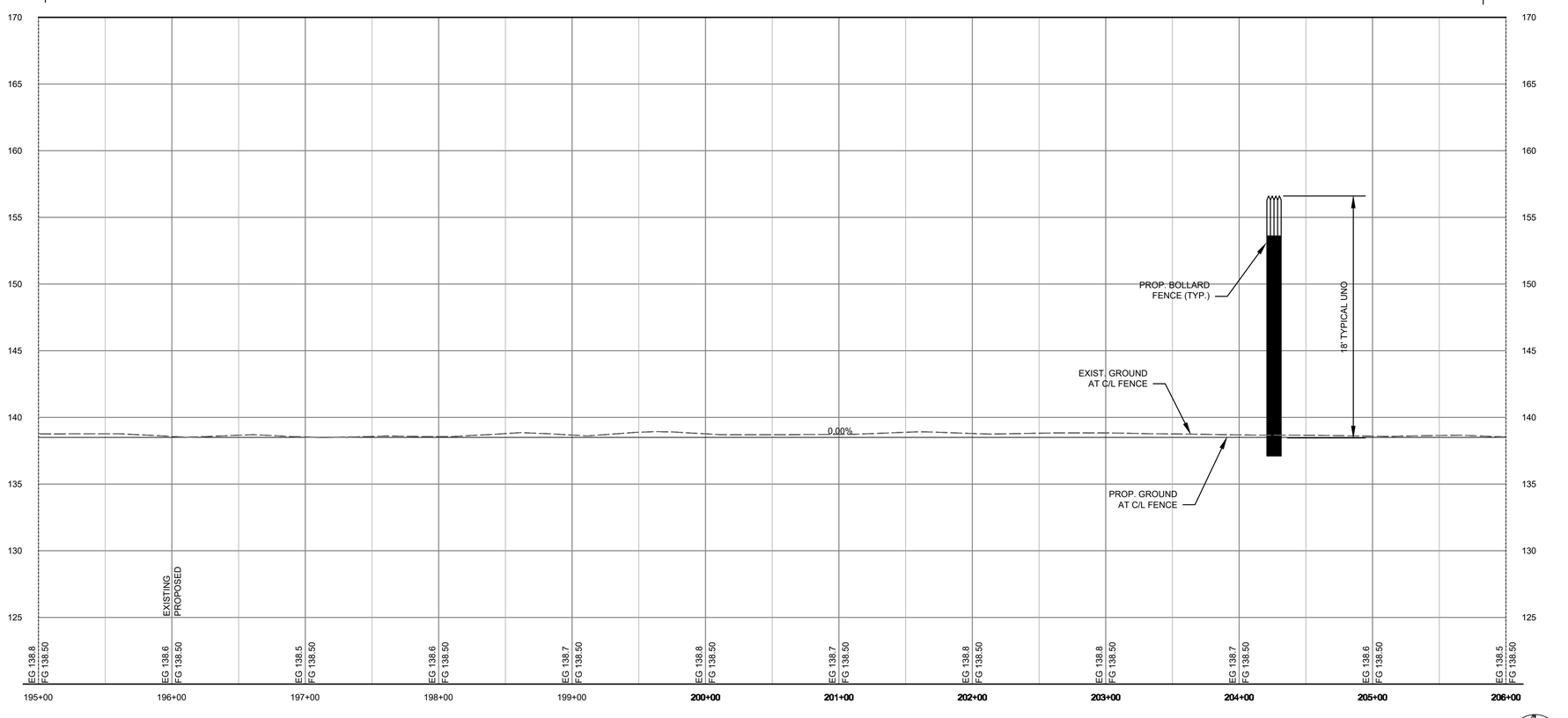
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 184+00.00 - 195+00.00

SHEET ID
LAGRULLA
C-117




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

0 50 100 1" = 50' - 0"
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## GENERAL NOTES

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3. CONTRACTOR SHALL ENSURE THAT ALL DESIGNS MEET TACTICAL INFRASTRUCTURE STANDARDS, LATEST EDITION.
4. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES, IRRIGATION CULVERTS AND DRAINAGE STRUCTURES, AND ADJUST/RELOCATE AS REQUIRED TO DE-CONFLICT WITH THE PROPOSED BOLLARD FENCE AND ENFORCEMENT ZONE (I.E.: EX. IRRIGATION VALVES TO BE RELOCATED TO NORTH LEVEE EMBANKMENT).
5. CONTRACTOR SHALL DESIGN AND INSTALL ALL DRAINAGE SYSTEMS FOR THIS PROJECT.
6. LIGHTING LOCATIONS ARE CONCEPTUAL. CONTRACTOR TO PROVIDE FINAL LIGHTING COMPUTATIONS AND LOCATIONS.

## KEYNOTES

1. PROPOSED NEW TYPE P-3 BOLLARD FENCE.
2. PROPOSED TYPE FC-2 AGGREGATE ALL-WEATHER ROAD.
3. CLEAR VEGETATION AND GRADE WITHIN ENFORCEMENT ZONE.
4. PROPOSED LIGHT POLE, PULLBOX, AND LIGHTING - SEE ELEC. FOR LOCATIONS (TYP).
5. PROPOSED POWER AND LIGHTING DISTRIBUTION CABLE AND CONDUIT/ DUCT BANK.
6. PROPOSED FENCE GROUNDING LOCATION.
7. PROPOSED COMMUNICATION CONDUIT/ DUCTBANK. (CABLE FUTURE BY OTHERS)
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9. GATE GROUNDING LOCATION
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US Army Corps of Engineers ®

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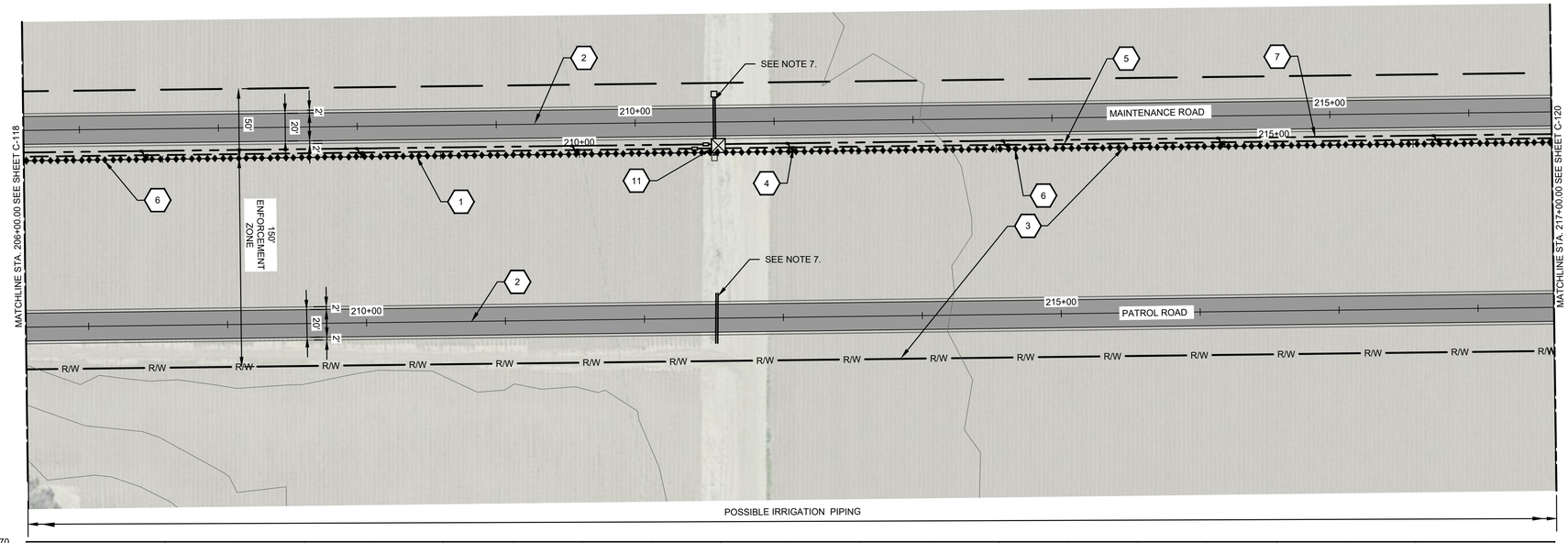
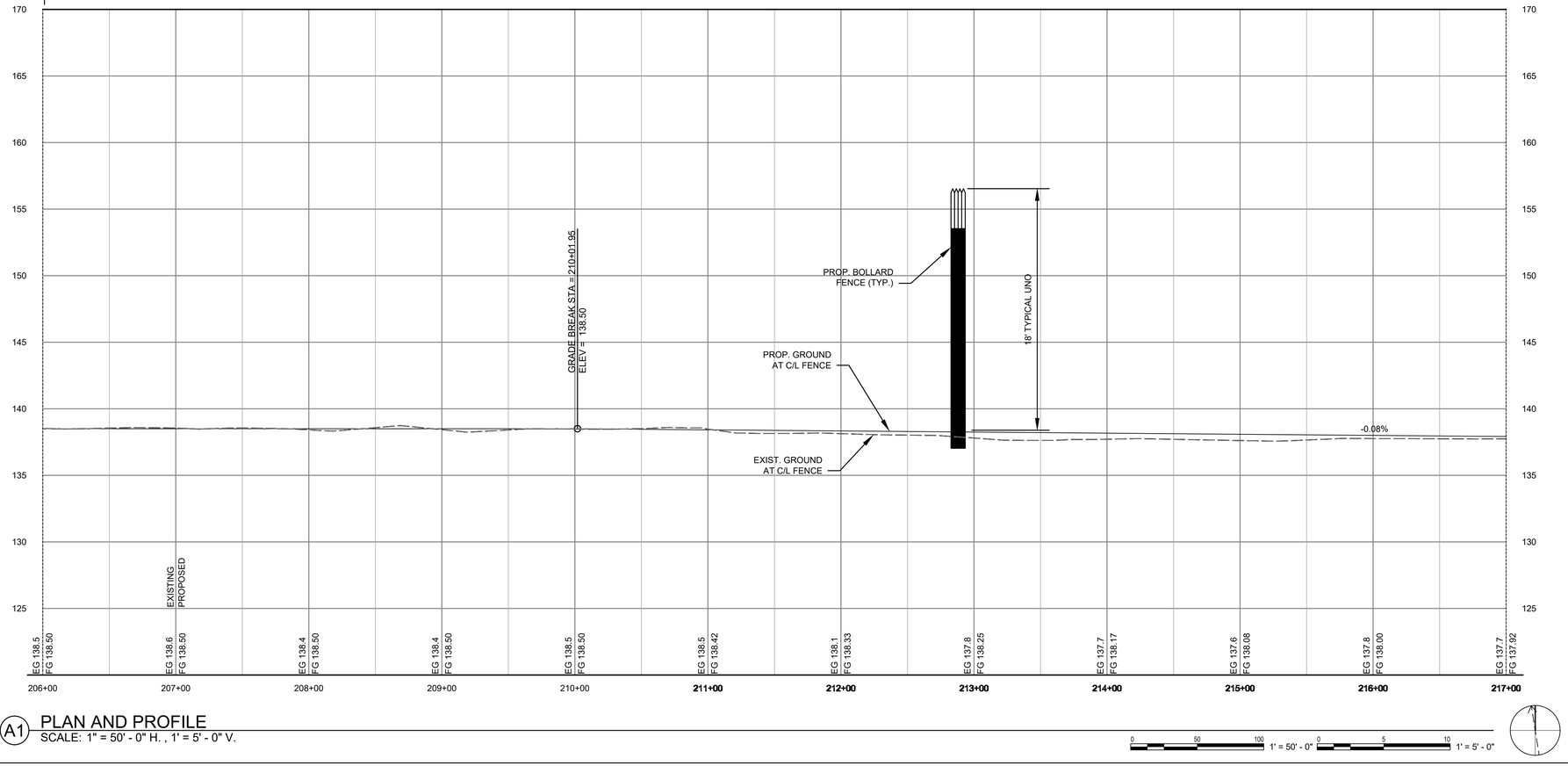
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 195+00.00 - 206+00.00

SHEET ID
LAGRULLA
C-118

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7. SEE SHEET E-502 FOR TYPICAL PLAN VIEW AT RVSS TOWER.

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US Army Corps of Engineers ®

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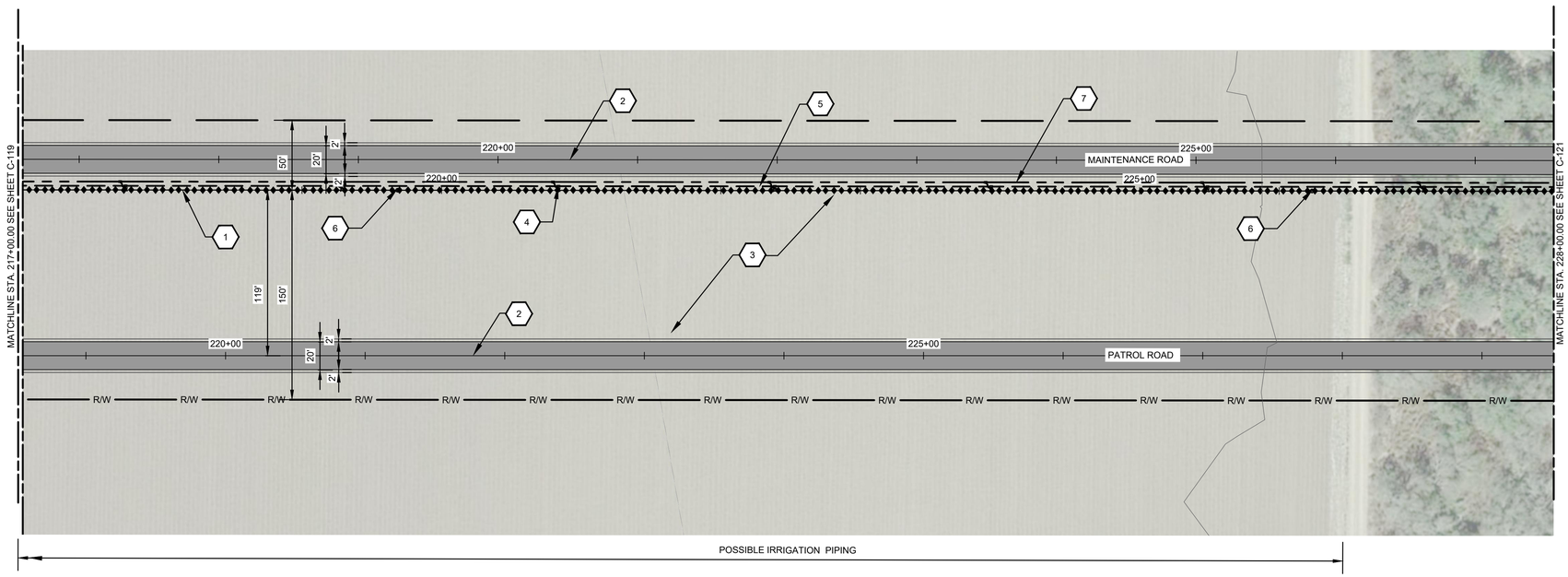
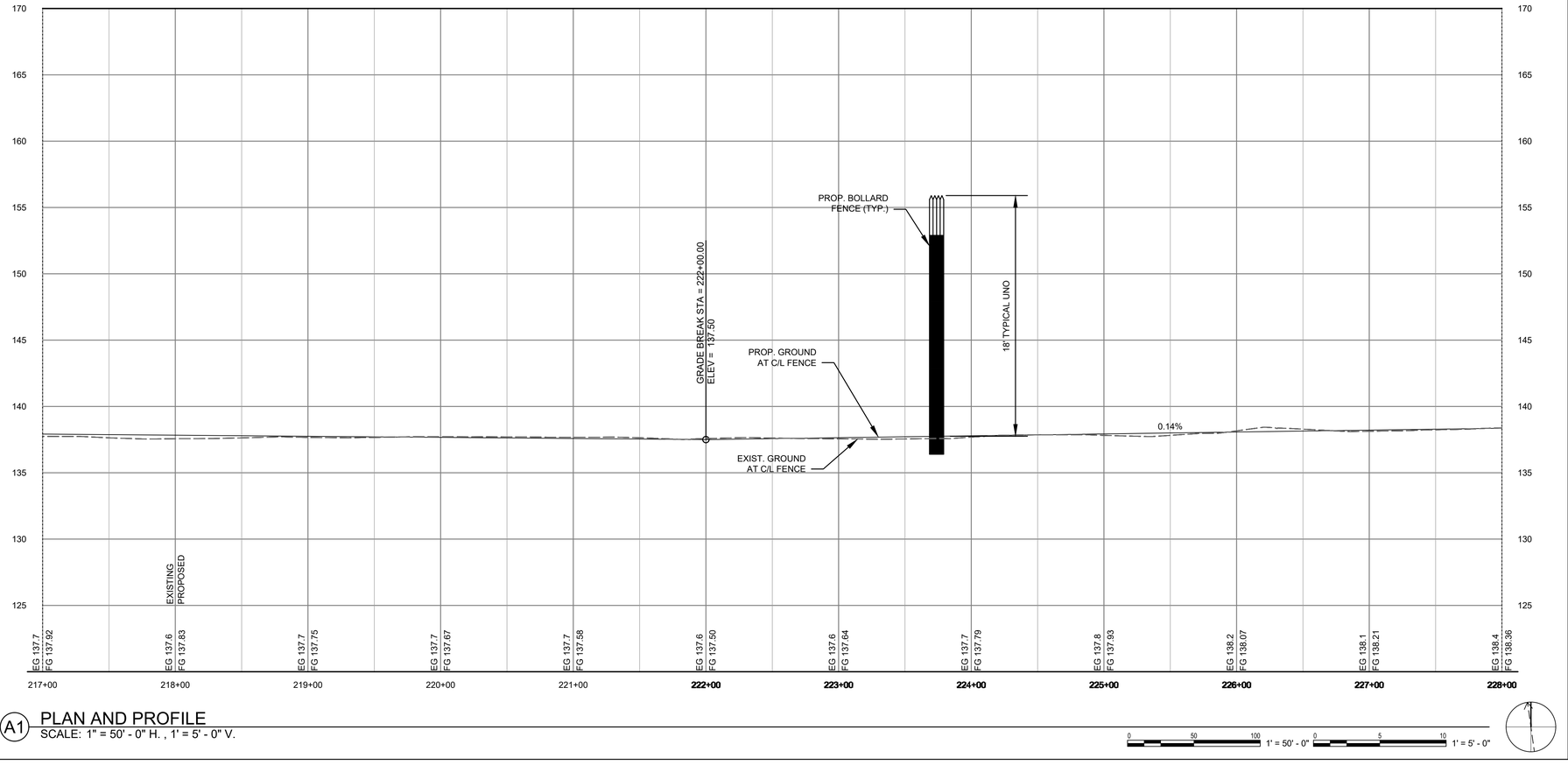
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 206+00.00 - 217+00.00

SHEET ID
LAGRULLA
C-119

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US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
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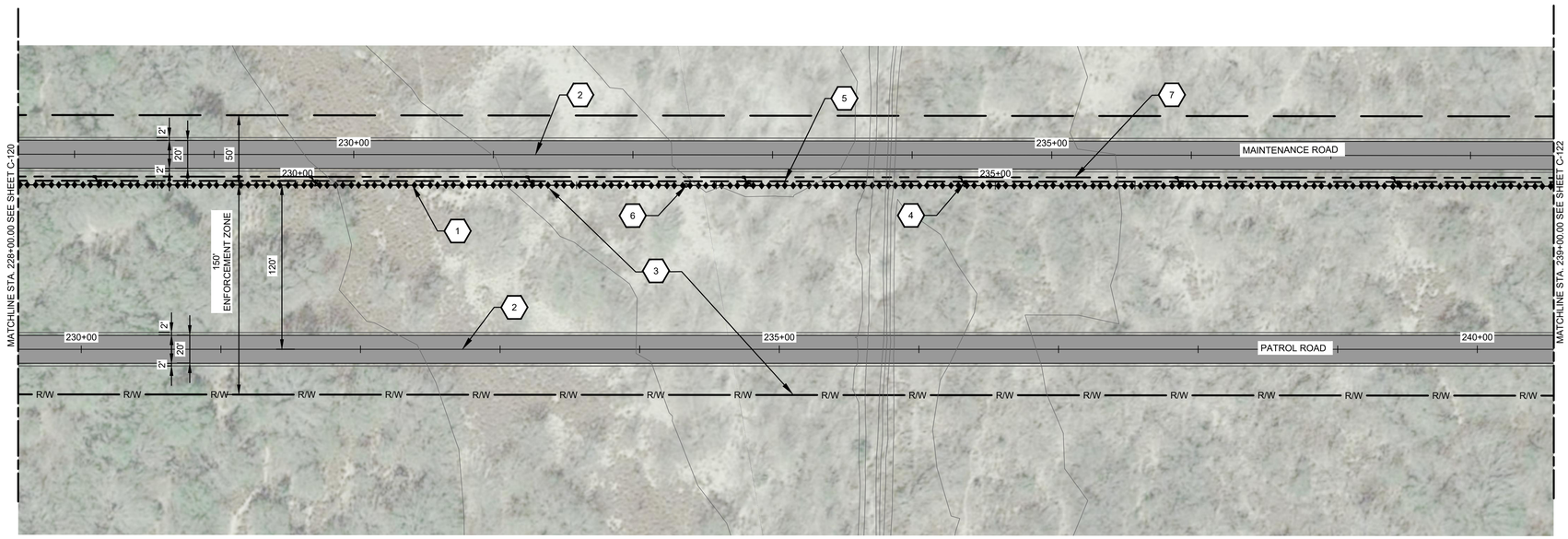
GALVESTON, TX 77553-1229

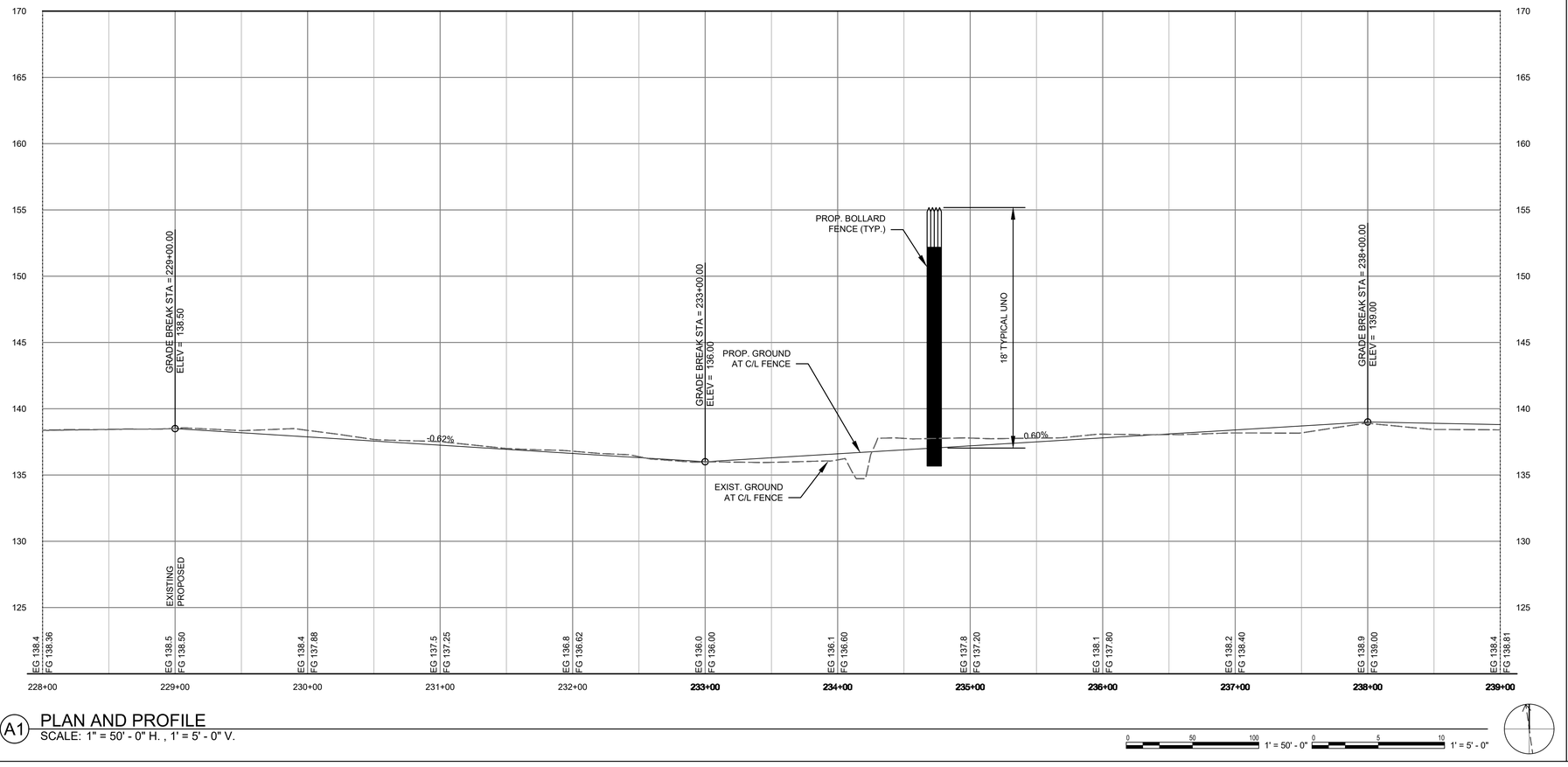
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 217+00.00 - 228+00.00

SHEET ID
LAGRULLA
C-120




A1 PLAN AND PROFILE
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US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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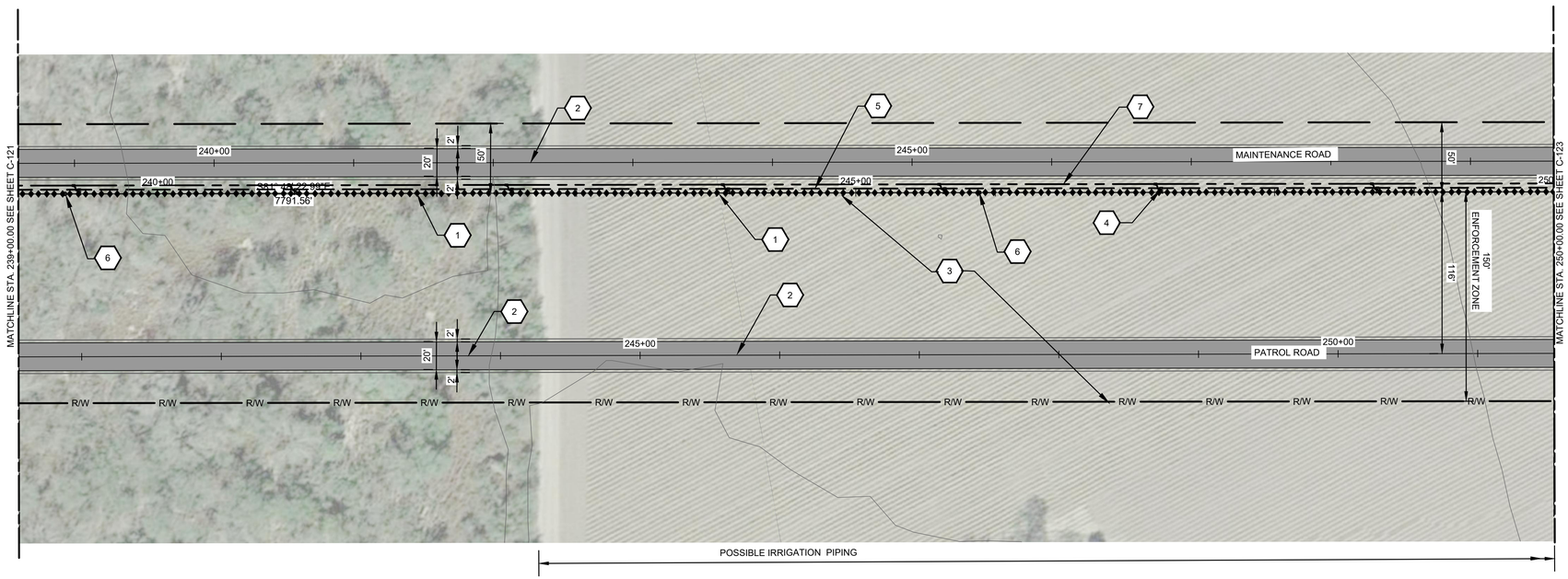
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

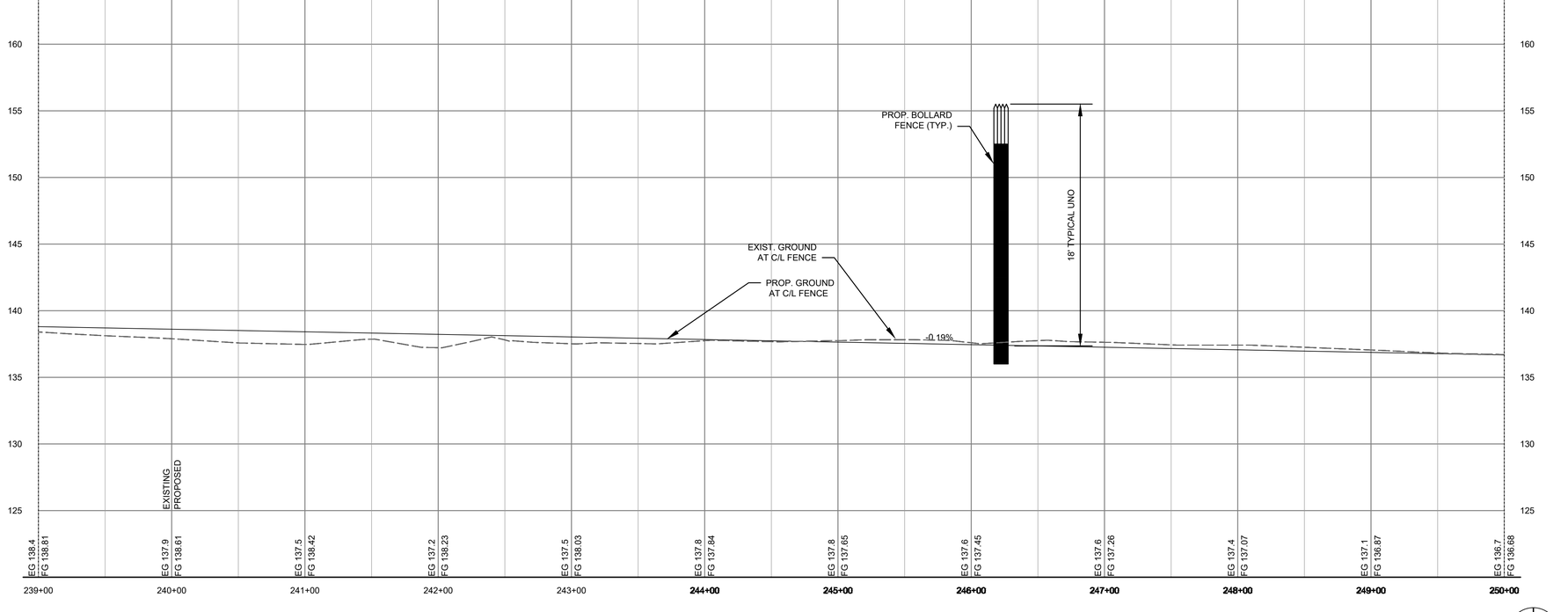
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 228+00.00 - 239+00.00

SHEET ID
LAGRULLA
C-121




A1 PLAN AND PROFILE
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US Army Corps of Engineers ®

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ETEGRA
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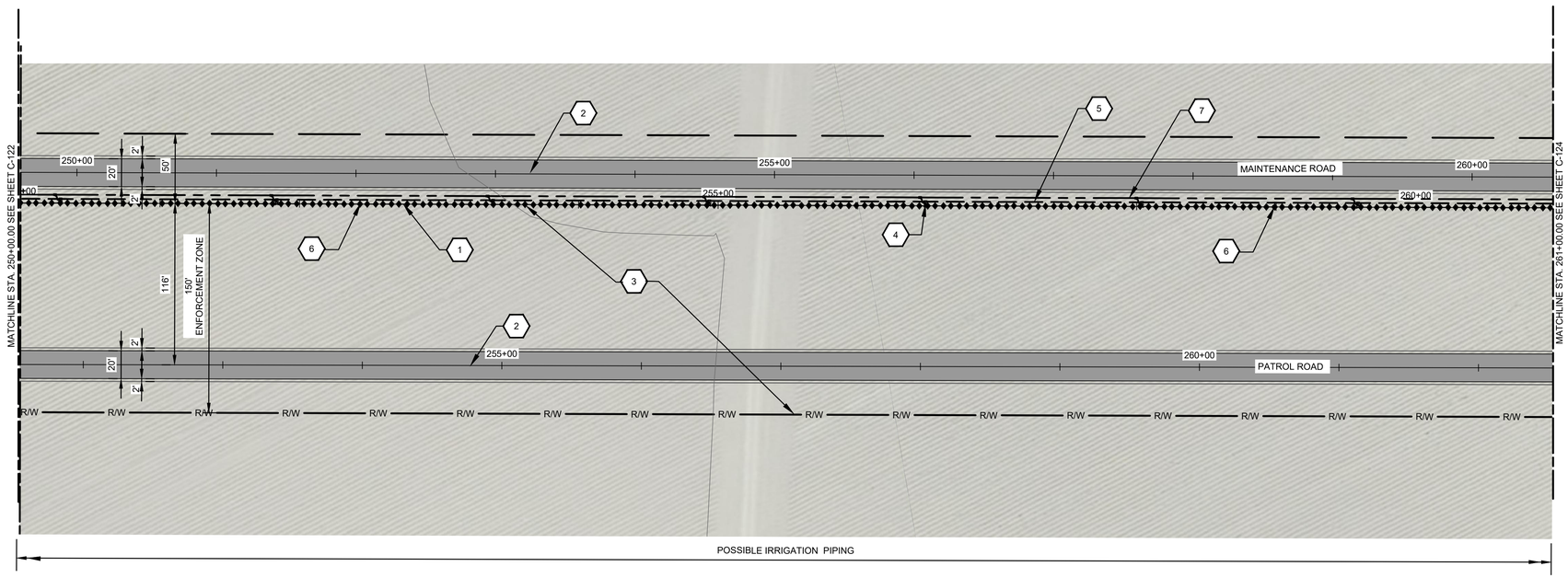
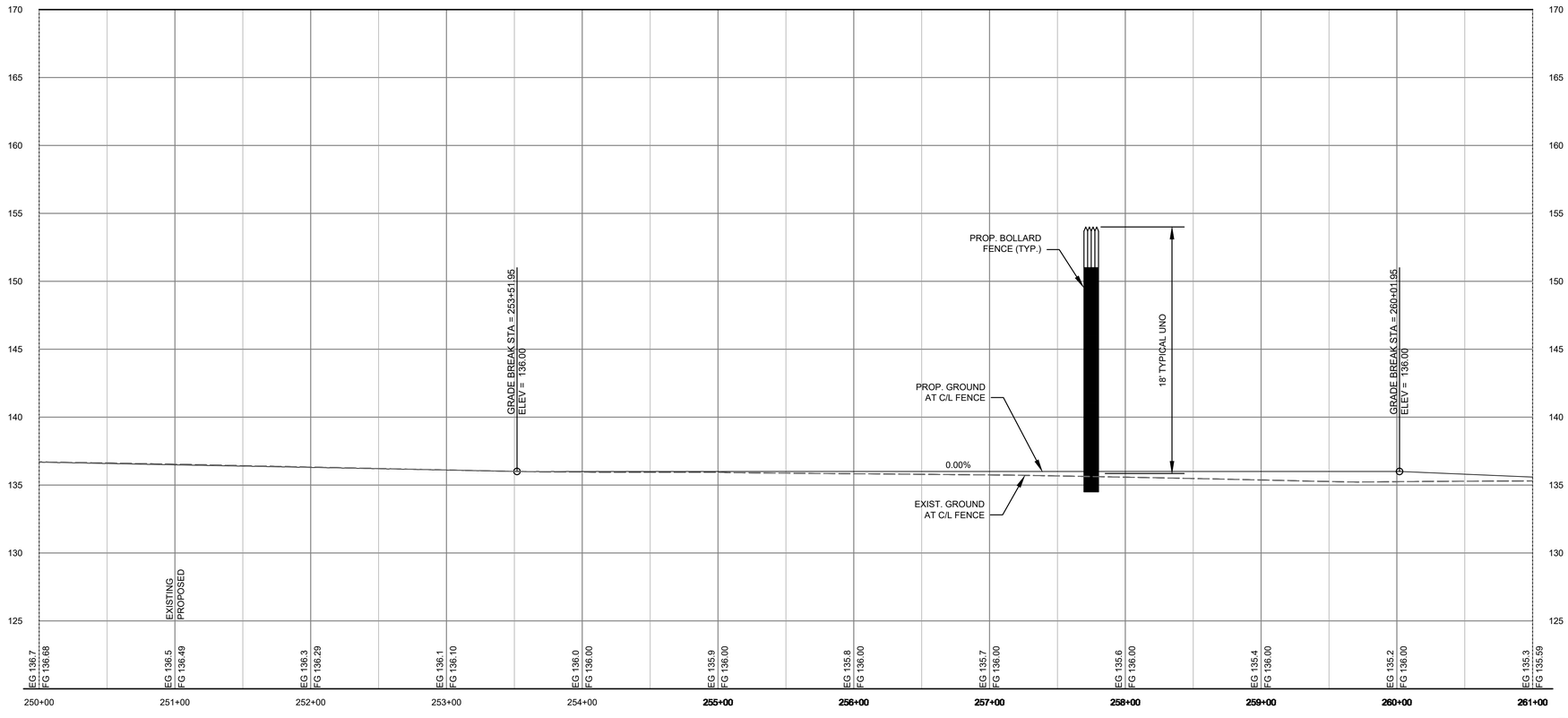
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 239+00.00 - 250+00.00

SHEET ID
LAGRULLA
C-122

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CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 250+00.00 - 261+00.00

SHEET ID
LAGRULLA
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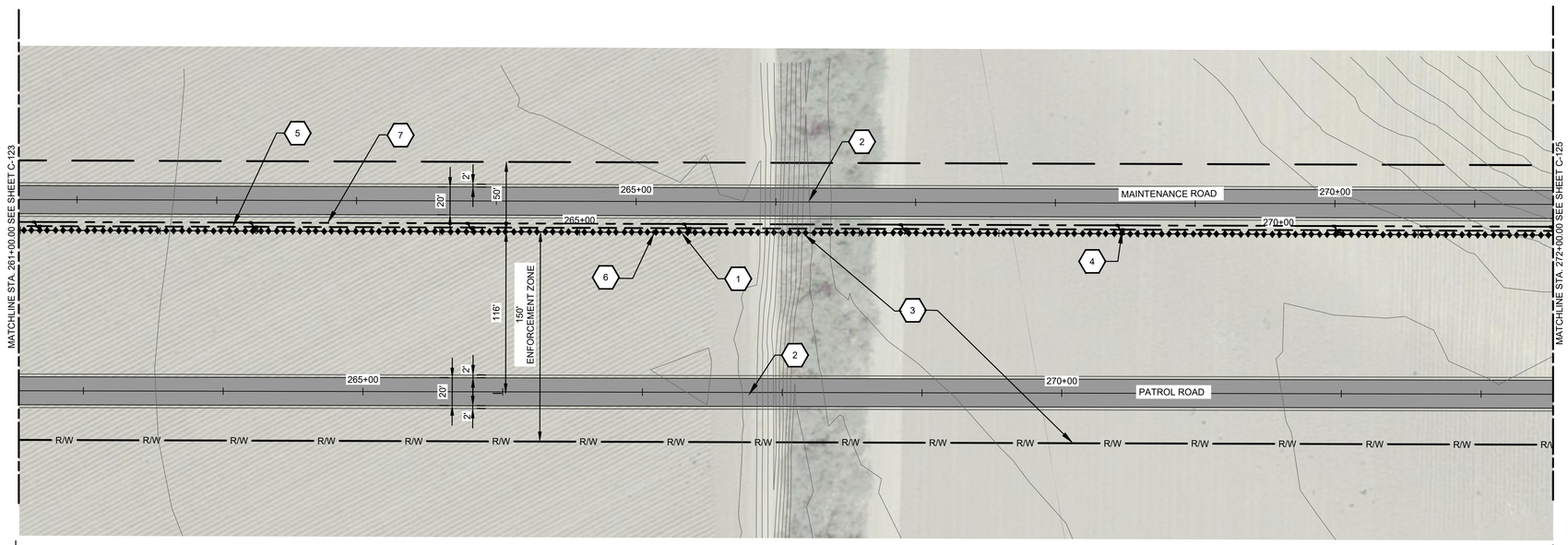


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8. GATE ELECTRICAL DISTRIBUTION EQUIPMENT.
9. GATE GROUNDING LOCATION
10. PROPOSED MOTORIZED VEHICLE SLIDE GATE.
11. PROPOSED RVSS SITE.
12. CONCEPTUAL ELECTRICAL UTILITY CONNECTION POINT.
13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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DRAWN BY: X
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SUBMITTED BY: X
ISSUED DATE:
SOLICITATION NO.:
CONTRACT NO.:
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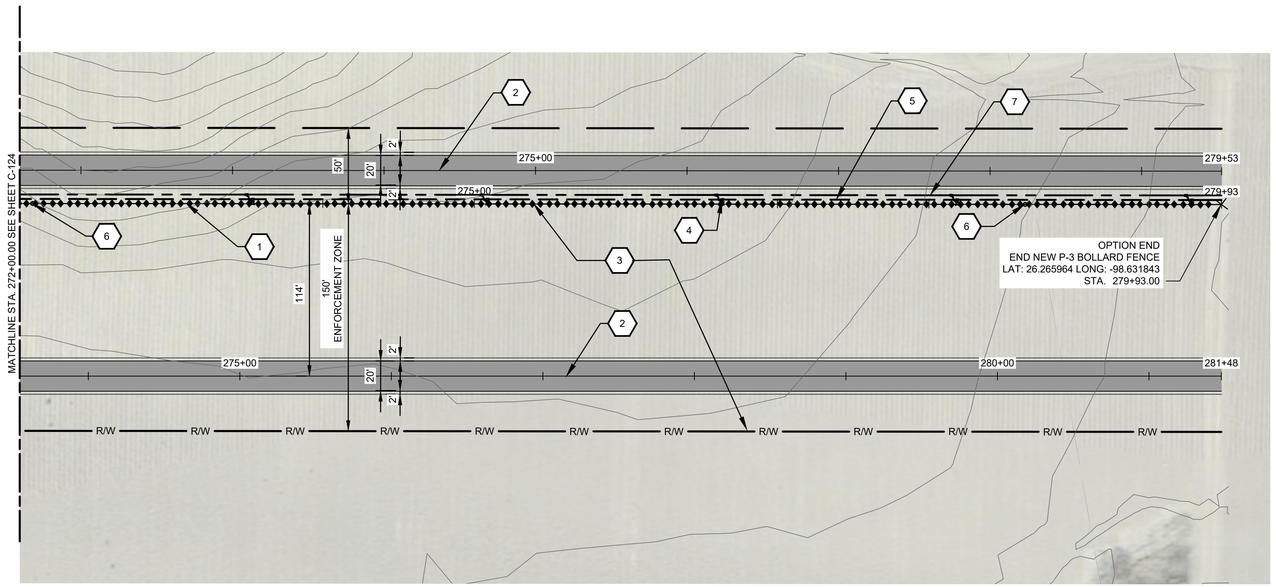
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

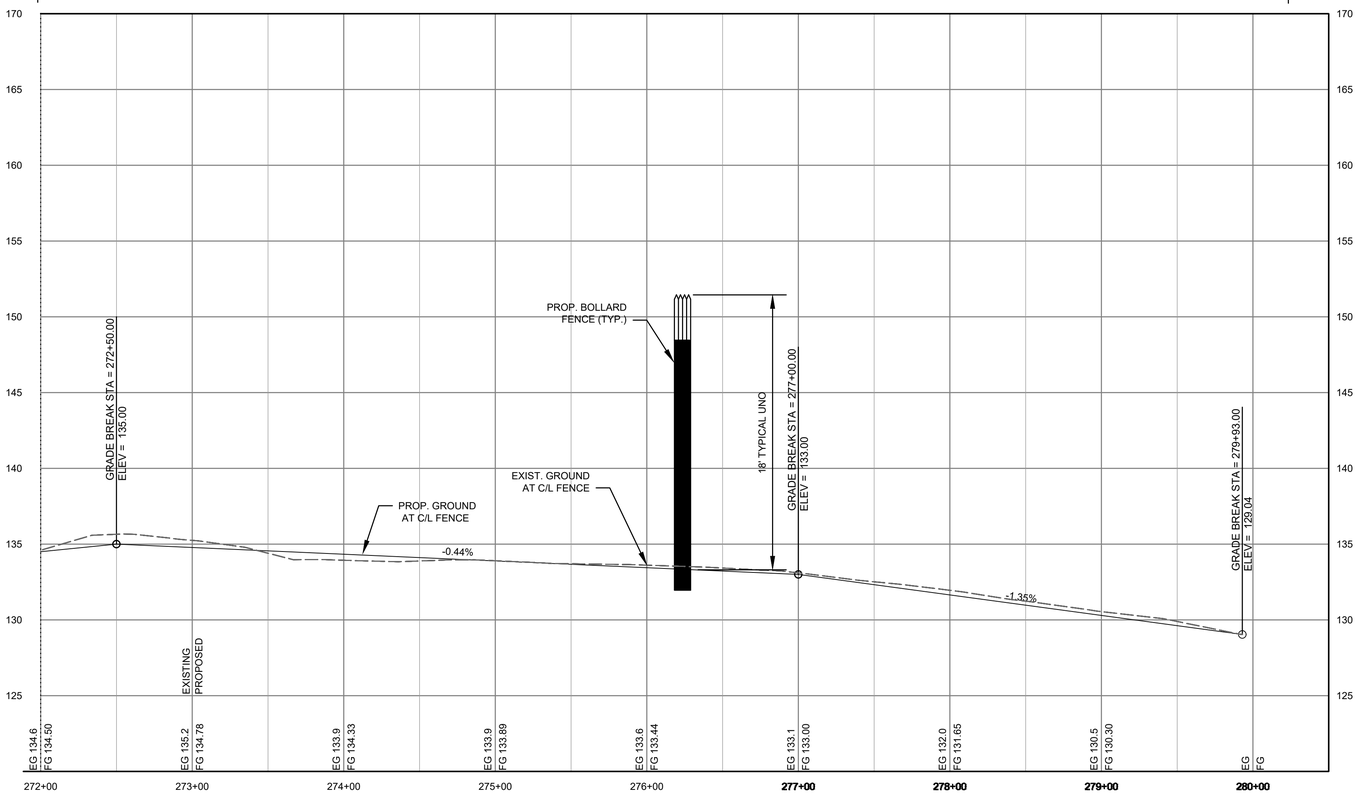
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 261+00.00 - 272+00.00

SHEET ID
LAGRULLA
C-124




A1 PLAN AND PROFILE
SCALE: 1" = 50' - 0" H. , 1' = 5' - 0" V.

0 50 100 1' = 50' - 0"  0 5 10 1' = 5' - 0"

## GENERAL NOTES

1. THIS SHEET IS AT 35% CONCEPT DESIGN AND NOT TO BE USED FOR CONSTRUCTION.
2. CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL GEOTECHNICAL TESTING, TOPOGRAPHIC MAPPING, DESIGN, SURVEY STAKE-OUT, ABOVE AND BELOW GROUND UTILITY IDENTIFICATIONS AND REQUIRED RELOCATIONS, AND REMOVAL AND PROPER DISPOSAL OF STRUCTURES, DEBRIS, ETC. LOCATED WITHIN THE ENFORCEMENT ZONE.
3. CONTRACTOR SHALL ENSURE THAT ALL DESIGNS MEET TACTICAL INFRASTRUCTURE STANDARDS, LATEST EDITION.
4. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES, IRRIGATION CULVERTS AND DRAINAGE STRUCTURES, AND ADJUST/RELOCATE AS REQUIRED TO DE-CONFLICT WITH THE PROPOSED BOLLARD FENCE AND ENFORCEMENT ZONE (I.E.: EX. IRRIGATION VALVES TO BE RELOCATED TO NORTH LEVEE EMBANKMENT).
5. CONTRACTOR SHALL DESIGN AND INSTALL ALL DRAINAGE SYSTEMS FOR THIS PROJECT.
6. LIGHTING LOCATIONS ARE CONCEPTUAL. CONTRACTOR TO PROVIDE FINAL LIGHTING COMPUTATIONS AND LOCATIONS.

## XX KEYNOTES

1. PROPOSED NEW TYPE P-3 BOLLARD FENCE.
2. PROPOSED TYPE FC-2 AGGREGATE ALL-WEATHER ROAD.
3. CLEAR VEGETATION AND GRADE WITHIN ENFORCEMENT ZONE.
4. PROPOSED LIGHT POLE, PULLBOX, AND LIGHTING - SEE ELEC. FOR LOCATIONS (TYP).
5. PROPOSED POWER AND LIGHTING DISTRIBUTION CABLE AND CONDUIT/ DUCT BANK.
6. PROPOSED FENCE GROUNDING LOCATION.
7. PROPOSED COMMUNICATION CONDUIT/ DUCTBANK. (CABLE FUTURE BY OTHERS)
8. GATE ELECTRICAL DISTRIBUTION EQUIPMENT.
9. GATE GROUNDING LOCATION
10. PROPOSED MOTORIZED VEHICLE SLIDE GATE.
11. PROPOSED RVSS SITE.
12. CONCEPTUAL ELECTRICAL UTILITY CONNECTION POINT.
13. CONTRACTOR TO DIRECTIONALLY BORE BENEATH STRUCTURE FOR CONTINUATION OF COMMUNICATIONS AND ELECTRICAL CONDUITS.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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| CONTRACT NO.: | X |
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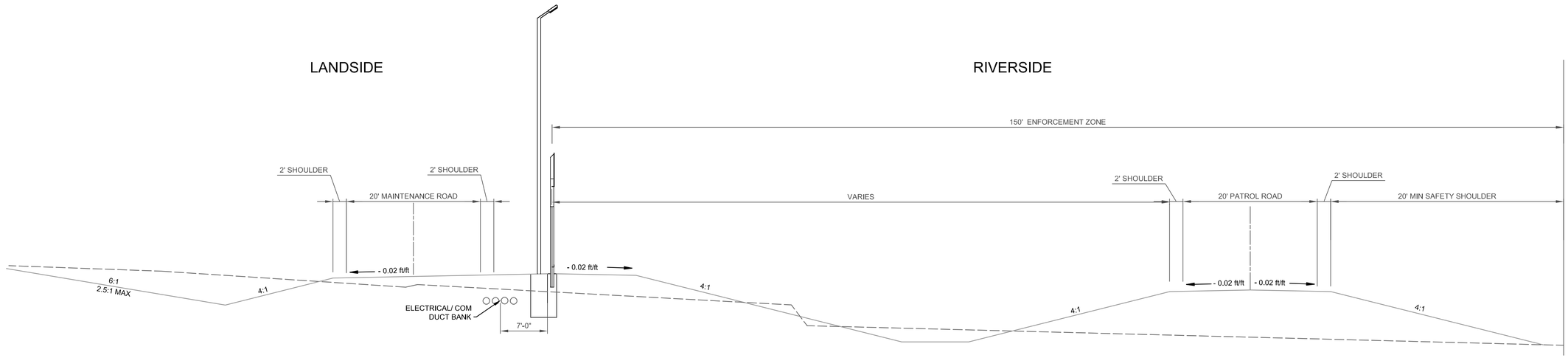
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND PROFILE
STA. 272+00.00 - 279+93.00

SHEET ID
LAGRULLA
C-125




A1 TYPICAL CROSS SECTION
SCALE: 1" = 100'

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
|---|---|---|
| | | |

ISSUED DATE:
SOLICITATION NO:
CONTRACT NO.:
FILE NUMBER:

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CHECKED BY: X
SUBMITTED BY: X
SIZE: ANSI D

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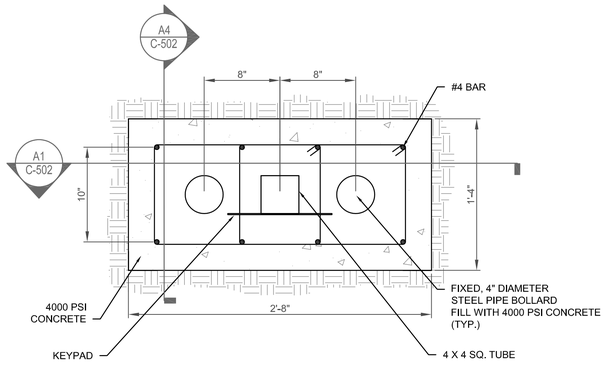
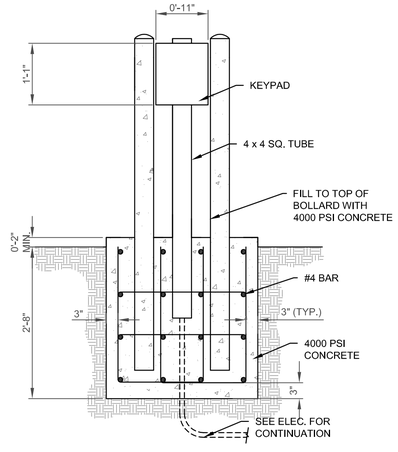
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

# TYPICAL CROSSSECTION

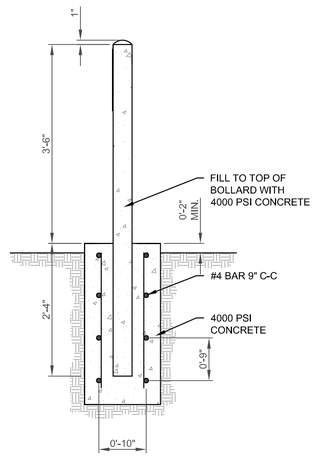
SHEET ID
LAGRULLA
C-301



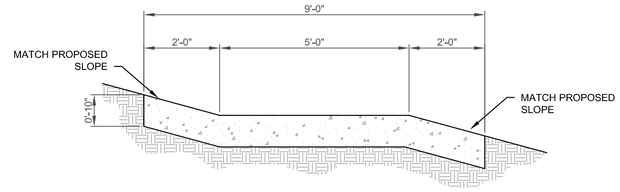

D1 KEYPAD MOUNTING DETAIL
SCALE: N.T.S.



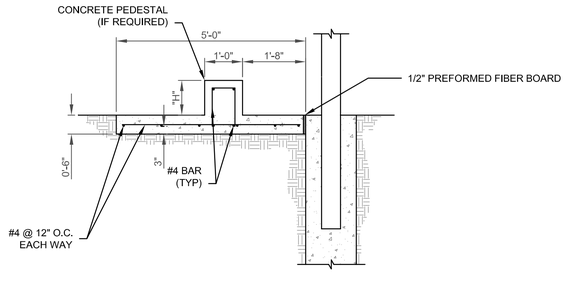

A1 KEYPAD MOUNTING DETAIL
SCALE: N.T.S.




A4 KEYPAD MOUNTING DETAIL
SCALE: N.T.S.




C6 10" CONCRETE ROAD CROSSING SLAB
SCALE: N.T.S.




A6 6" CONCRETE SLAB
SCALE: N.T.S.

## GENERAL NOTES

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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CHECKED BY: B.PRESTON
SUBMITTED BY: B.PRESTON
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SOLICITATION NO:
CONTRACT NO.:
FILE NUMBER:

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
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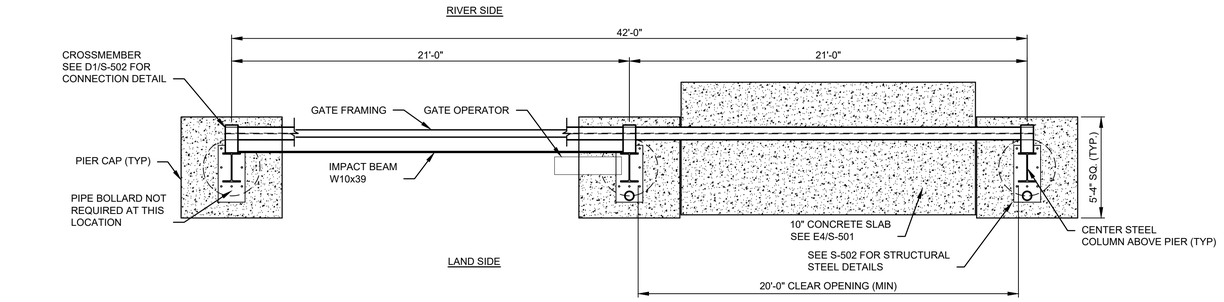
DALLAS, TX, 75252

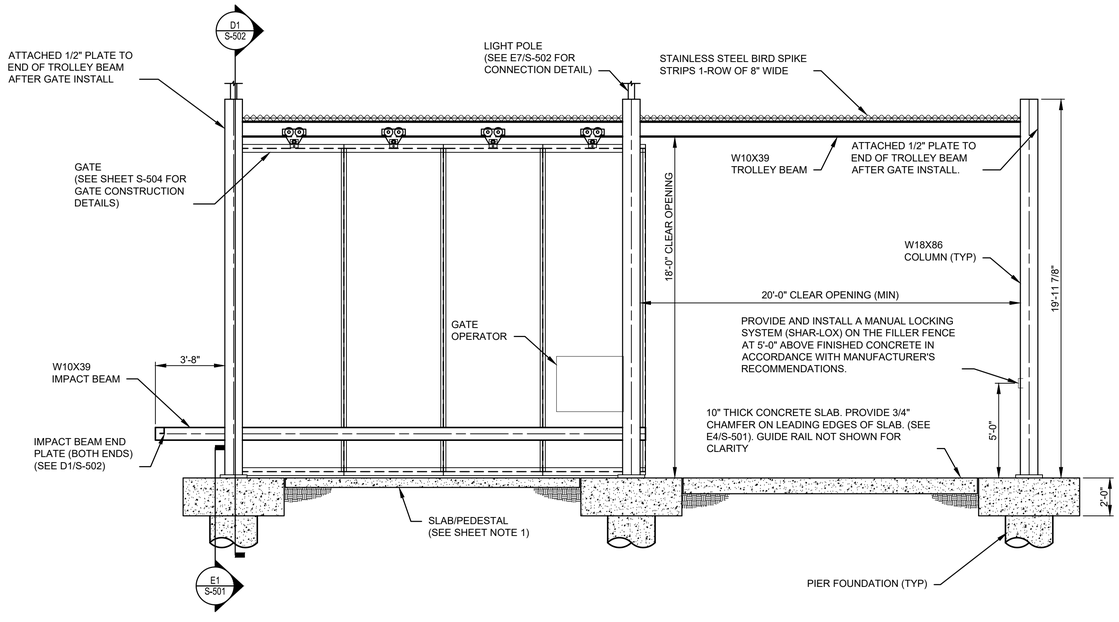
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

# ROAD CROSSING AND KEYPAD MOUNT DETAILS

SHEET ID
LAGRULLA
C-501




E2 PLAN - 20 FT. AUTOMATED GATE
SCALE: N.T.S.




A2 ELEVATION - 20 FT. AUTOMATED GATE (LOOKING TOWARD RIVER SIDE)
SCALE: N.T.S.

## GENERAL NOTES

1. FOR BASE PLATE AND BOLT DETAIL REFER TO DRAWING S-501 AND S-502.
2. FOR GATE OPERATOR PLATFORM REFER TO DRAWING S-503.
3. PROVIDE STEEL PLATES, WELDED TO TOP OF COLUMNS #1 AND #2 AND BOLTED TO THE LIGHT POST BASEPLATE. SEE DETAIL E7/S-502 FOR DETAILS.
4. ANY GAP BETWEEN FENCE AND GATE SHALL BE NO MORE THAN 4".
5. EARTHWORK SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 31 00 00.
6. INSTALL 1 1/2" DIA GALVANIZED STEEL LADDER TO ACCESS GATE OPERATOR. LADDER RUNGS SHALL BE EQUALLY SPACE (8") 1" SQ GALVANIZED STEEL BARS WITH NON-SLIP TREATMENT ON TOP OF EACH RUNG. PAINT WELDED SURFACES WITH A CORROSION PROTECTIVE COATING AS NEEDED.
7. MINIMUM LADDER OPENING IS 16" IN WIDTH.

## SHEET NOTES

1. SEE SHEET C-501 FOR CROSSING SLAB INFORMATION.
2. SEE SHEET C-501 FOR 6" CONCRETE SLAB INFORMATION.

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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GALVESTON, TX 77553-1229

ETEGRA
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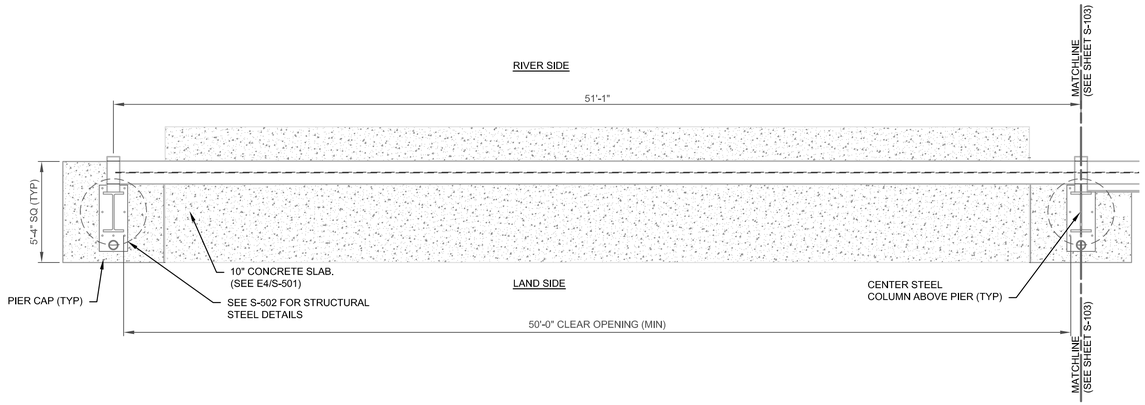
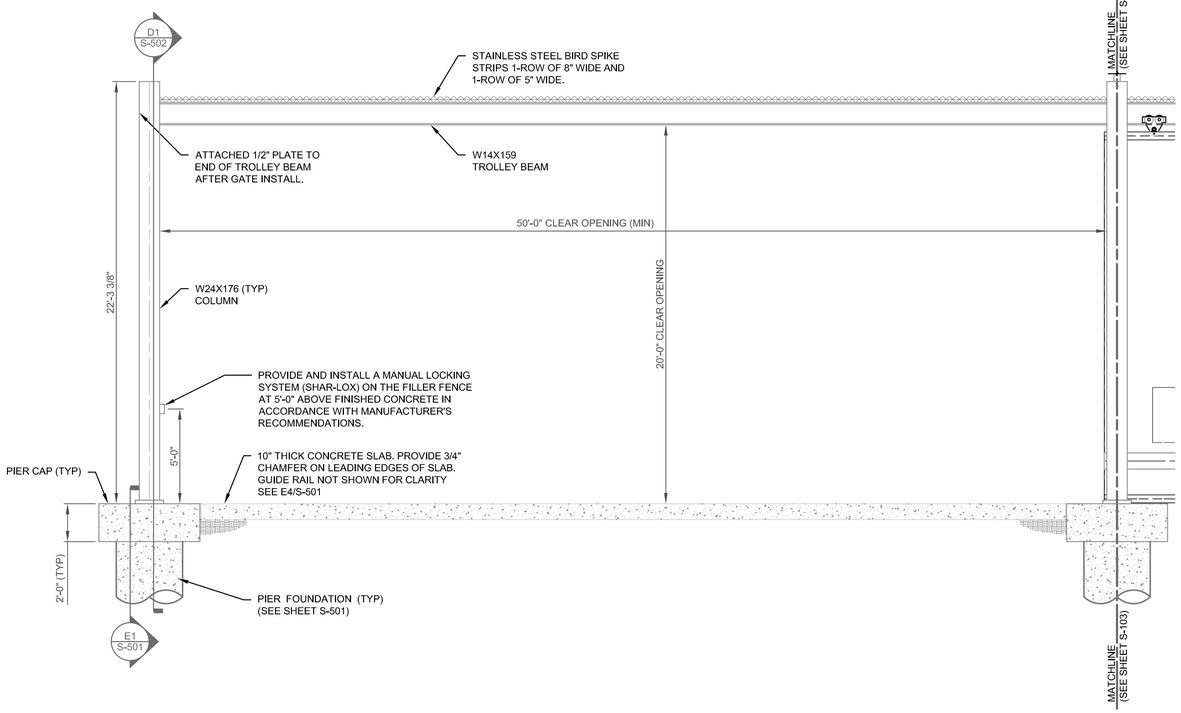
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND ELEVATION
20 FT. SINGLE LEAF AUTOMATED GATE

SHEET ID
LAGRULLA
S-101




E2 PLAN - 50 FT. AUTOMATED GATE
SCALE: N.T.S




A2 ELEVATION - 50 FT. AUTOMATED GATE (LOOKING TOWARD RIVER SIDE)
SCALE: N.T.S

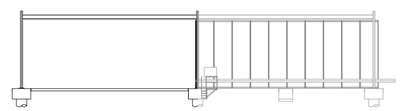
## GENERAL NOTES

1. FOR BASE PLATE AND BOLT DETAIL REFER TO DRAWING S-501 AND S-502.
2. FOR GATE OPERATOR PLATFORM REFER TO DRAWING S-503.
3. PROVIDE STEEL PLATES, WELDED TO TOP OF COLUMNS #1 AND #2 AND BOLTED TO THE LIGHT POST BASEPLATE. SEE DETAIL E7/S-502 FOR DETAILS.
4. ANY GAP BETWEEN FENCE AND GATE SHALL BE NO MORE THAN 4".
5. EARTHWORK SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 31 00 00.
6. INSTALL 1 1/2" DIA GALVANIZED STEEL LADDER TO ACCESS GATE OPERATOR. LADDER RUNGS SHALL BE EQUALLY SPACE (8") 1" SQ GALVANIZED STEEL BARS WITH NON-SLIP TREATMENT ON TOP OF EACH RUNG. PAINT WELDED SURFACES WITH A CORROSION PROTECTIVE COATING AS NEEDED.
7. MINIMUM LADDER OPENING IS 16" IN WIDTH.

## SHEET NOTES

1. SEE SHEET C-501 FOR CROSSING SLAB INFORMATION.

## KEYPLAN



US Army Corps of Engineers ®

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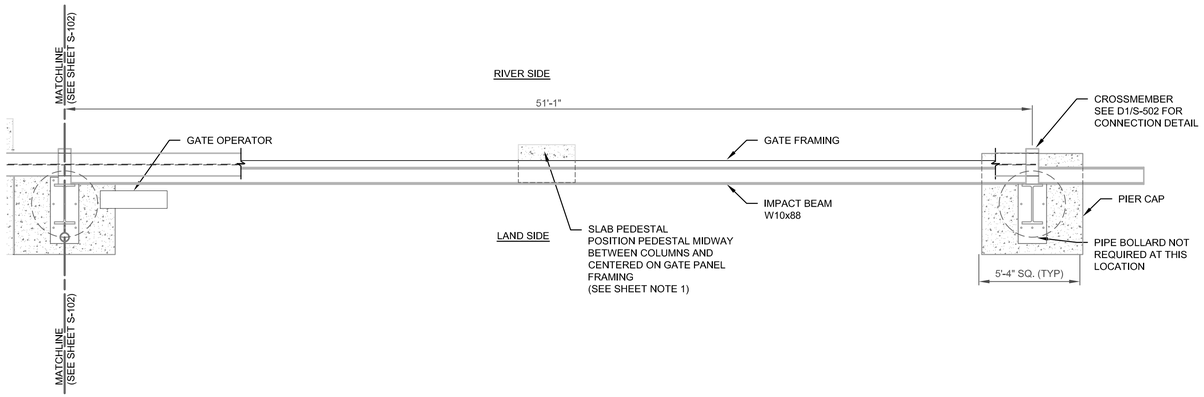
US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17216 PRESTON RD., SUITE 3300
DALLAS, TX. 75252

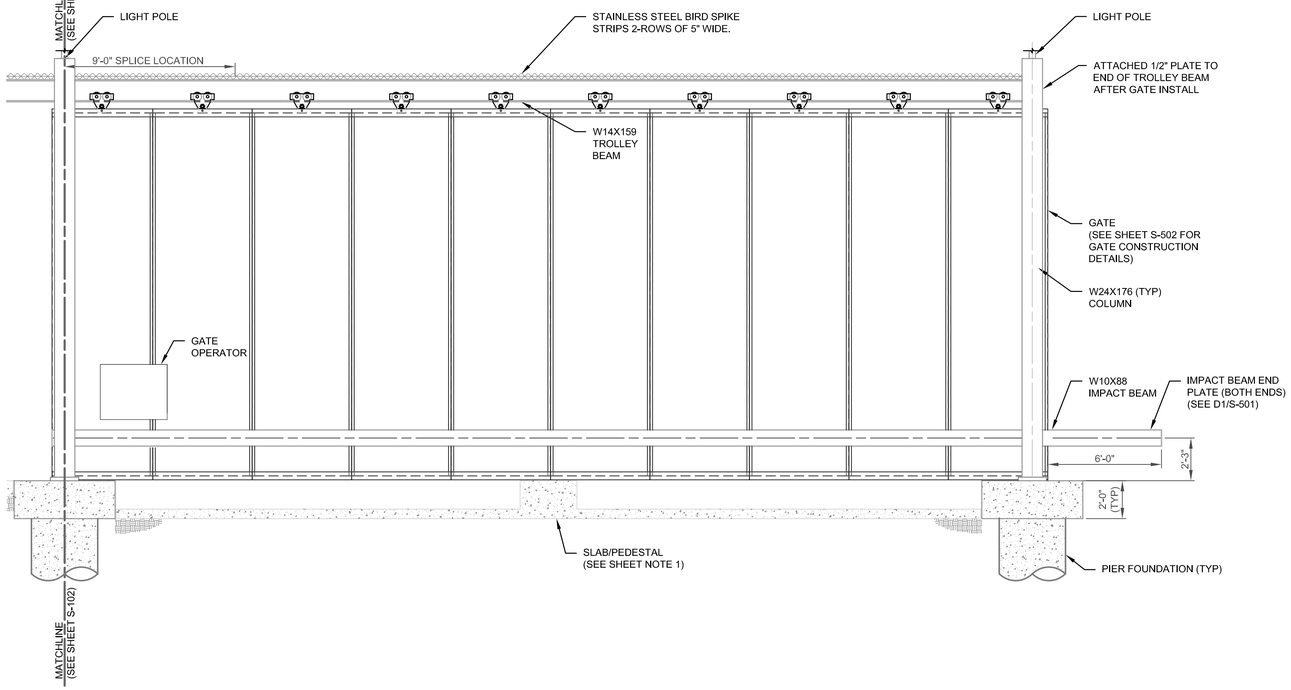
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

# PLAN AND ELEVATION
# 50 FT. SINGLE LEAF AUTOMATED GATE

SHEET ID
LAGRULLA
S-102




E2 PLAN - 50 FT. AUTOMATED GATE
SCALE: N.T.S.




A2 ELEVATION - 50 FT. AUTOMATED GATE (LOOKING TOWARD RIVER SIDE)
SCALE: N.T.S.

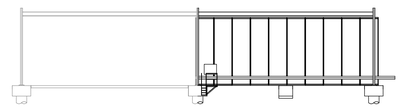
## GENERAL NOTES

1. SEE S-102.

## SHEET NOTES

1. SEE SHEET C-501 SLAB PEDESTAL INFORMATION.

## KEYPLAN



US Army Corps of Engineers ®

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US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
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GALVESTON, TX 77553-1229

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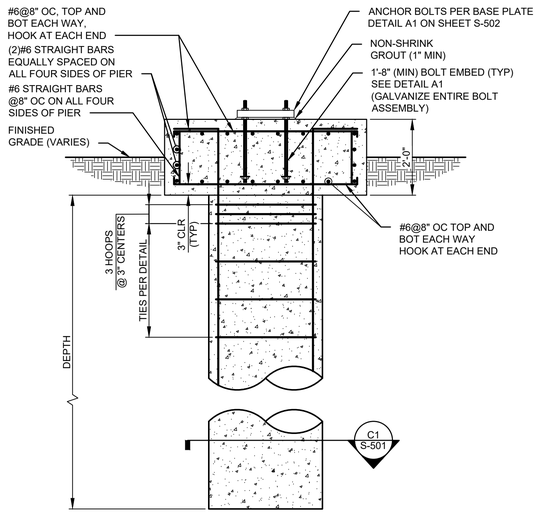
17218 PRESTON RD. SUITE 3300
DALLAS, TX. 75252

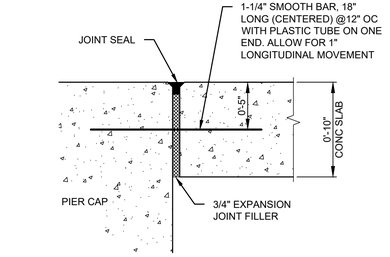
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

PLAN AND ELEVATION
50 FT. SINGLE LEAF AUTOMATED GATE

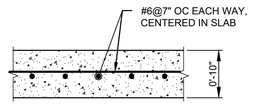
SHEET ID
LAGRULLA
S-103



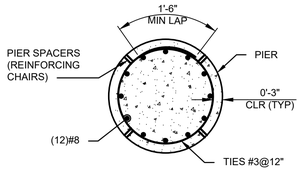

E1 PIER FOUNDATION / PILE CAP REINFORCING DETAIL
SCALE: N.T.S.



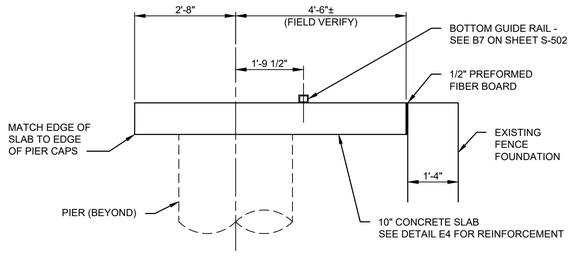

F4 SLEEVED EXPANSION JOINT
SCALE: N.T.S.



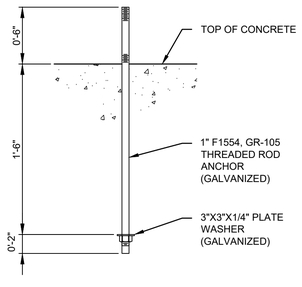

E4 CONCRETE SLAB REINFORCING
SCALE: N.T.S.




C1 PIER FOUNDATION SECTION
SCALE: N.T.S.




C4 CONCRETE SLAB SIZING DETAIL
SCALE: N.T.S.




A1 ANCHOR BOLT DETAIL
SCALE: N.T.S.

US Army Corps of Engineers ®

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DRAWN BY: X
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CONTRACT NO.:
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US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
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GALVESTON, TX 77553-1229

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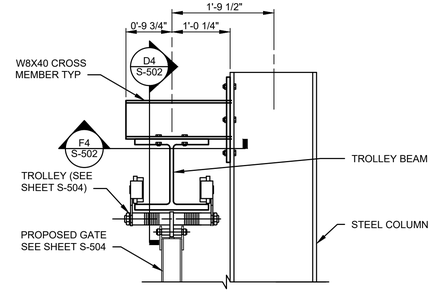
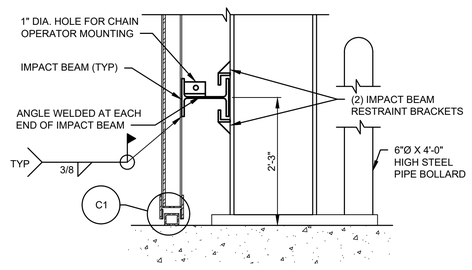
DALLAS, TX. 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

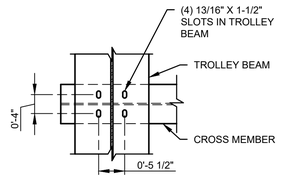
CONCRETE DETAILS

SHEET ID
LAGRULLA
S-501

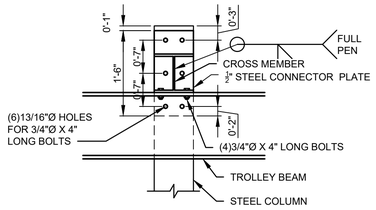


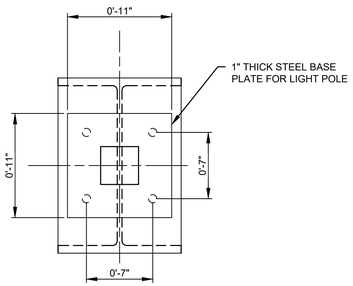

## D1 STRUCTURAL COLUMN SECTION
SCALE: N.T.S.

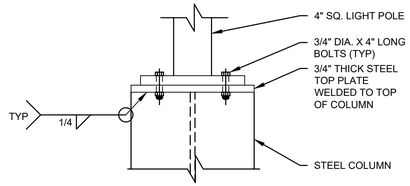



## F4 DETAIL
SCALE: N.T.S.

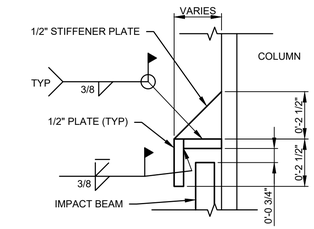



## D4 DETAIL
SCALE: N.T.S.

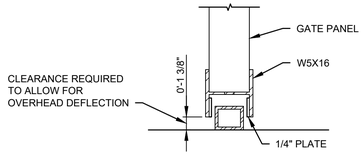


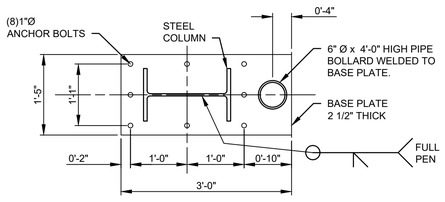

## E7 DETAIL - LIGHT POLE CONNECTION
SCALE: N.T.S.



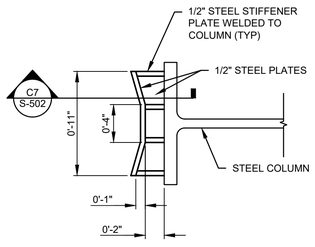

## C7 IMPACT BEAM SECTION
SCALE: N.T.S.



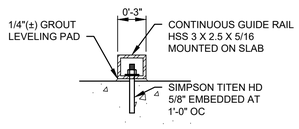

## C1 BOTTOM RAIL GUIDE
SCALE: N.T.S.




## A1 DETAIL - COLUMN BASE PLATE
SCALE: N.T.S.




## B4 DETAIL - IMPACT BEAM BRACKETS
SCALE: N.T.S.




## B7 BOTTOM RAIL DETAIL
SCALE: N.T.S.

## GENERAL NOTES

## SHEET NOTES

1. INSTALL DRAINAGE HOLES AT 1'-0" O.C. ON THE IMPACT BEAM.
2. BOLLARDS SHALL BE INSTALLED ONLY BY COLUMNS NEXT TO THE ROAD.
3. SEAL INSTALLATION HOLES ON THE GUIDE RAIL.

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| MARK | DESCRIPTION | DATE |
|---|---|---|

DESIGNED BY: X
DRAWN BY: X
CHECKED BY: X
SUBMITTED BY: X
ISSUED DATE:
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CONTRACT NO.:
FILE NUMBER:
SIZE: ANSI D

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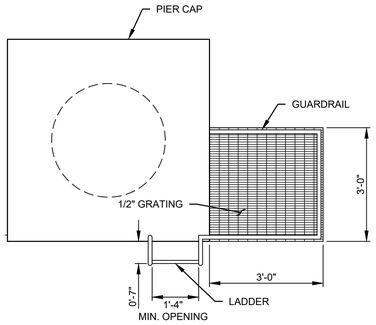
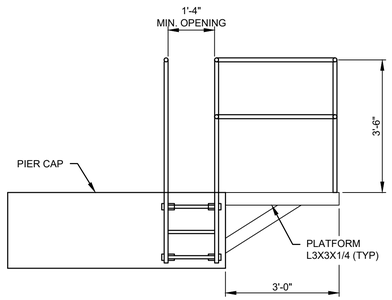
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

STRUCTURAL DETAILS

SHEET ID
LAGRULLA
S-502




E1 OPERATOR PLATFORM - PLAN
SCALE: N.T.S.




C1 OPERATOR PLATFORM - ELEVATION
SCALE: N.T.S.

## GENERAL NOTES

## SHEET NOTES

1. ACCESS LADDER NOT REQUIRED ON THE SITE IF DIFFERENCE BETWEEN TOP OF PIER CAP AND GRADE IS 1'-0" OR LESS.
2. CONTRACTOR TO DESIGN OPERATOR PLATFORM WHERE REQUIRED.

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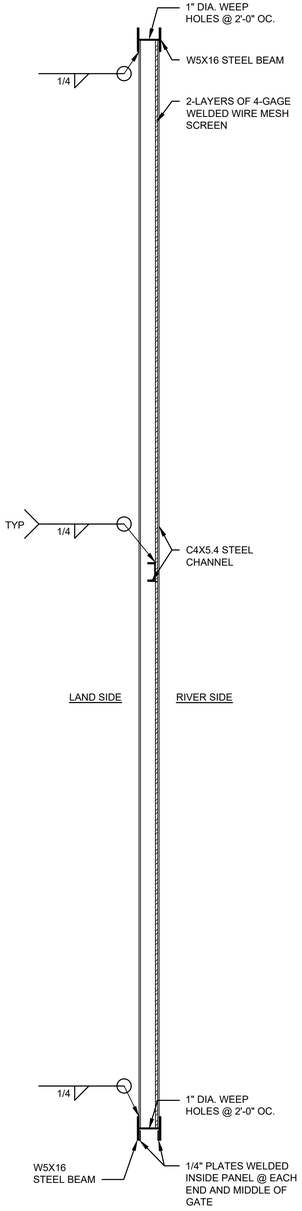
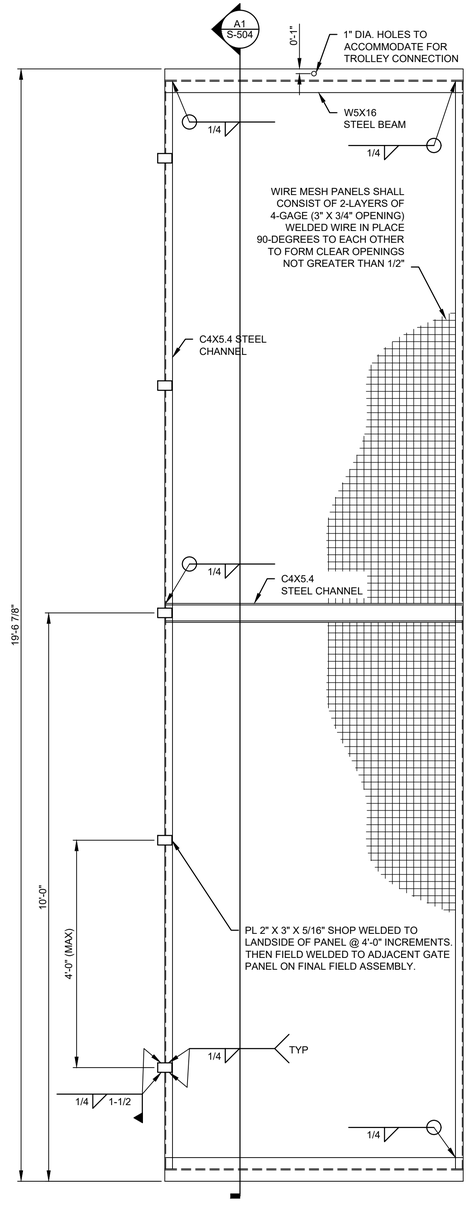
CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

# STRUCTURAL DETAILS

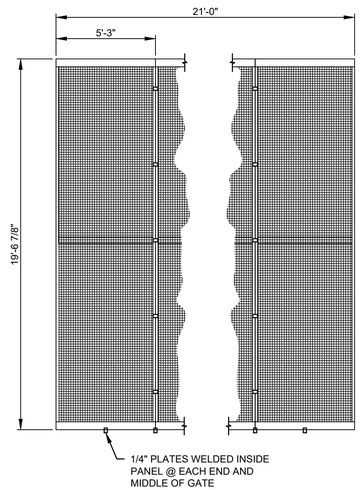
SHEET ID
LAGRULLA
S-503



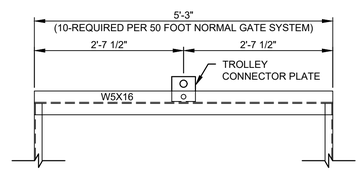

A1 SECTION
SCALE: N.T.S.



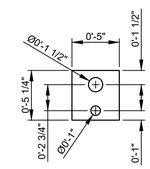

A3 ELEVATION
SCALE: N.T.S.



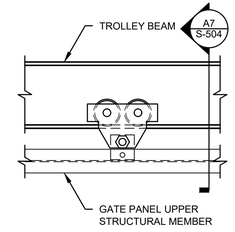

E5 ELEVATION - WIRE MESH GATES (TYP.)
SCALE: N.T.S.



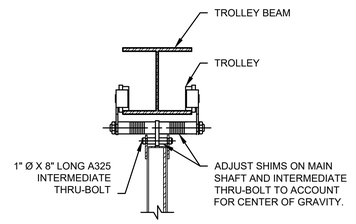

C5 DETAIL - TROLLEY CONNECTOR PLATE
SCALE: N.T.S.




A5 DETAIL - TROLLEY CONNECTOR PLATES
SCALE: N.T.S.




C7 DETAIL - TROLLY CONNECTION
SCALE: N.T.S




A7 SECTION THROUGH TROLLEY
SCALE: N.T.S.

## GENERAL NOTES

## SHEET NOTES

1. JOIN COMPLETED PANELS TOGETHER IN FIELD USING WELD PLATES AND STITCH WELDS AS SHOWN.
2. AFTER GATE PANELS ARE ASSEMBLED, ATTACH OPERATOR GUIDE RAIL, IMPACT BEAM, AND OTHER APPURTENANCES IN THEIR APPROPRIATE POSITIONS FOR OPERATION.
3. REFER TO ELECTRIC AND CONTROL SCHEMATICS, FOR ATTACHMENT OF OTHER CONTROLS.
4. THE MESH SHALL BE POSITIONED SUCH THAT ONLY 3/4" ON CENTER VERTICAL BARS ARE PLACED ON THE RIVER SIDE.
5. STEEL FASTENERS SHALL CONFORM TO ASTM F3125 AND ASTM A325, AND SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
6. THE CONNECTOR PLATE DETAILED ON DETAIL A5 SHALL BE FABRICATED AND USED IN LIEU OF THE TROLLEY MANUFACTURER'S CONNECTOR PLATE.
7. CONNECTOR PLATE SHALL BE BOLTED TO THE UPPER FRAMING MEMBER OF THE PANELS.
8. WELDING SCHEME FOR DOUBLE LAYER 4-GAGE WIRE MESH:
   - VERTICAL COMPONENT OF WIRE MESH SHALL BE POSITIONED FACING RIVER SIDE.
   - WIRE MESH LAYERS SHALL BE SPOT-WELDED TO EACH OTHER ON APPROXIMATE 12" CENTERS, OR AS REQUIRED TO PREVENT WARPING.
   - WIRE MESH LAYERS SHALL BE WELDED TOGETHER AND AT THE GATE PANEL PERIMETER ON APPROXIMATE 12" CENTERS, OR AS REQUIRED TO PREVENT WARPING.
   - WIRE MESH SHALL ALSO BE WELDED TO C4X5.4 CROSS-FRAMING AT 12" CENTERS TOP AND BOTTOM OF CHANNEL.
9. INSTALL ONE TROLLEY PER PANEL.

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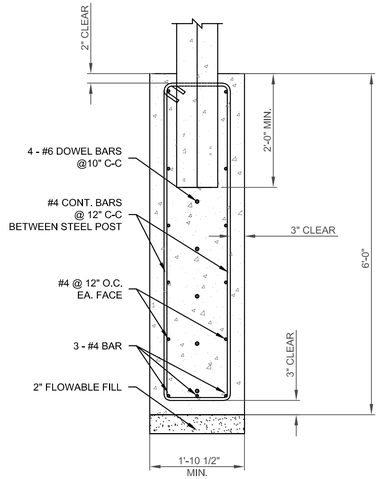
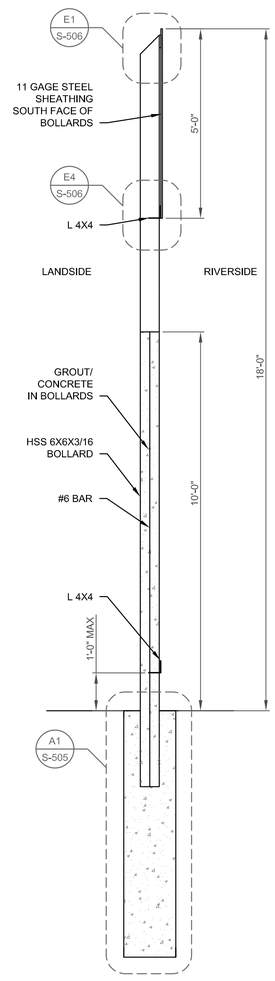
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

# WIRE MESH PANEL DETAILS

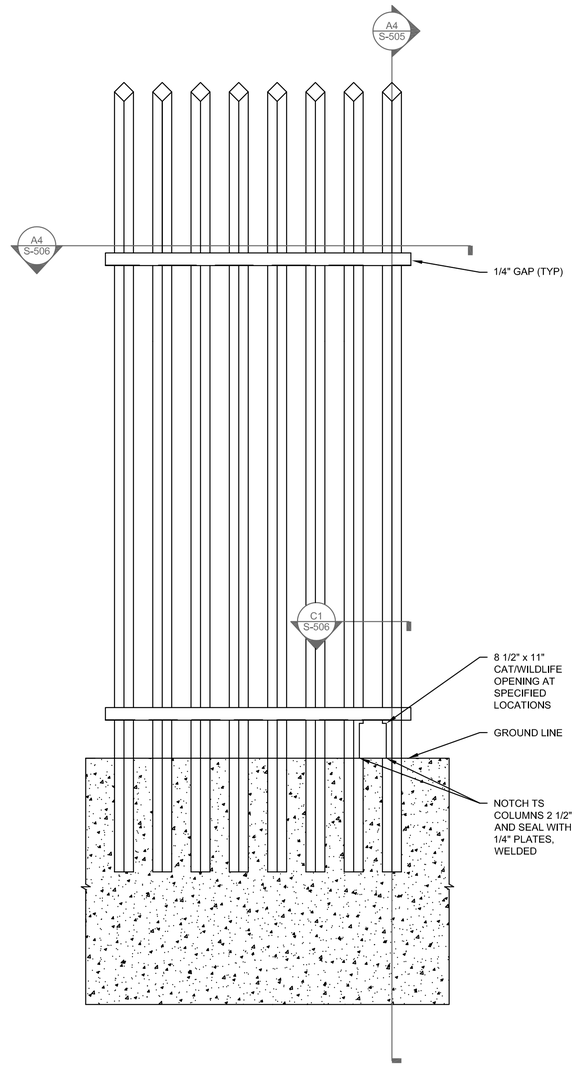
SHEET ID
LAGRULLA
S-504




A1 BOLLARD FENCE FOUNDATION
SCALE: N.T.S.




A4 BOLLARD FENCE SECTION
SCALE: N.T.S.




A7 TYPICAL 8' SECTION BOLLARD FENCE
SCALE: N.T.S.

## GENERAL NOTES

1. 6" MIN. CLR. REQUIRED BETWEEN BOTTOM OF HSS & BOTTOM OF FOUNDATION.
2. CONCRETE TO BE 4000 PSI.
3. STEEL BOLLARDS SHALL BE ASTM A500 GRADE B. REFERENCE TECHNICAL SPECIFICATIONS FOR ALL OTHER MATERIAL REQUIREMENTS NOT PROVIDED IN THE DRAWINGS.
4. PLACE A 2" (MIN) FLOWABLE FILL MUD-MAT AFTER EXCAVATION FOR THE BOLLARD FENCE FOUNDATION. MUD MAT TO ACT AS A LEVELING PAD FOR THE FOUNDATION.
5. AT LOCATIONS DIRECTED BY CBP, NOTCH TWO ADJACENT BOLLARDS 2 $\frac{1}{2}$" TO HEIGHT REQUIRED TO PROVIDE 8 $\frac{1}{2}$" x 11" CAT OPENING.
6. BOLLARD FILLER FENCE WILL BE SUPPORTED ON A 6-FOOT-DEEP FOUNDATION. THE FINAL REPORT WILL PROVIDE FOOTING BEARING AND SUBGRADE PREPARATION CRITERIA FOR SUPPORT ON STIFF, LEAN AND FAT, CLAYEY NATIVE SOILS, WHICH WILL LIKELY INCLUDE 1) AN ALLOWABLE BEARING PRESSURE OF 2,000 PSF; 2) CLEANING OF LOOSENED OR SLOUGHED SOILS PRIOR TO CONCRETE PLACEMENT; 3) REVIEW OF PREPARED BEARING SURFACES PRIOR TO REINFORCING STEEL AND CONCRETE PLACEMENT; AND 4) PLACEMENT OF A MINIMUM 2" THICK CONCRETE MUD MAT IMMEDIATELY FOLLOWING BEARING SURFACE REVIEW AND PRIOR TO REINFORCING STEEL PLACEMENT IN ORDER TO LIMIT ANY CHANGES IN THE IN-SITU SUBGRADE MOISTURE CONTENT.

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| CONTRACT NO.: | |
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DRAWN BY: B.DUNNE
CHECKED BY: B.PRESTON
SUBMITTED BY: B.PRESTON
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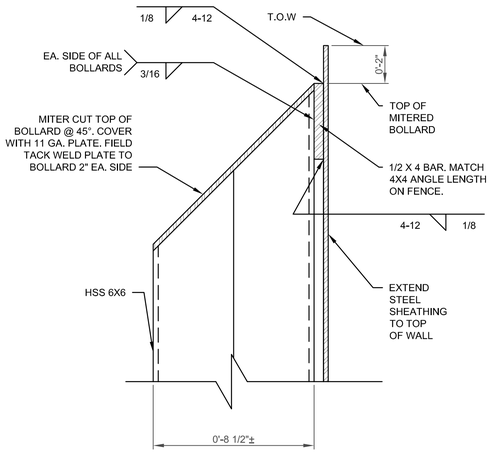
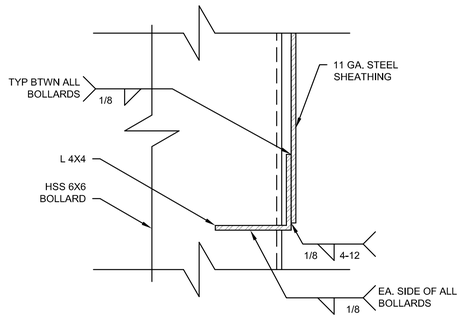
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BOLLARD FENCE

FENCE DETAILS
20 FT. FENCE

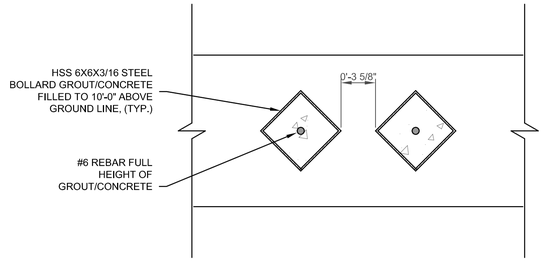
SHEET ID
LAGRULLA
S-505



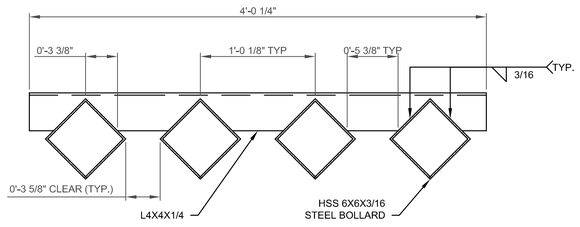

E1 TOP OF FENCE DETAIL
SCALE: N.T.S.



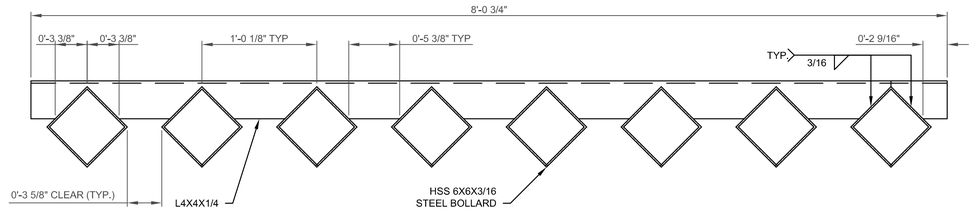

E4 BOTTOM OF SHEATHING DETAIL
SCALE: N.T.S.




C1 BOLLARD FENCE DETAIL
SCALE: N.T.S.




A1 BOLLARD FILLER FENCE
SCALE: N.T.S.




A4 BOLLARD FENCE
SCALE: N.T.S.

## GENERAL NOTES

1. 6" MIN. CLR. REQUIRED BETWEEN BOTTOM OF HSS & BOTTOM OF FOUNDATION.
2. CONCRETE TO BE 4000 PSI.
3. STEEL BOLLARDS SHALL BE ASTM A500 GRADE B. REFERENCE TECHNICAL SPECIFICATIONS FOR ALL OTHER MATERIAL REQUIREMENTS NOT PROVIDED IN THE DRAWINGS.

XX

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| MARK | DESCRIPTION | DATE |
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| SOLICITATION NO.: | |
| CONTRACT NO.: | |
| FILE NUMBER: | |
| DESIGNED BY: B.PRESTON | |
| DRAWN BY: B.DUNNE | |
| CHECKED BY: B.PRESTON | |
| SUBMITTED BY: B.PRESTON | |
| SIZE: ANSI D | |

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CONSTRUCTION PROJECT RIO GRANDE VALLEY
(RGV)
CONSTRUCTION OF BOLLARD FENCE

FENCE DETAILS
20 FT. FENCE

SHEET ID
LAGRULLA
S-506

## ONE-LINE AND RISER

KVA,CLG
HV-LV
Z
POWER TRANSFORMER

AMP
*
LOW VOLTAGE CIRCUIT BREAKER, DRAWOUT:
E.O. = ELECTRICALLY OPERATED
G = GROUND
I = INSTANTANEOUS
IA = INSTANTANEOUS AMPS
LT = LONG TIME
M.O. = MANUALLY OPERATED
ST = SHORT TIME
S = SENSOR RATING

A
MOLDED CASE CIRCUIT BREAKER

AF
MEDIUM VOLTAGE CIRCUIT BREAKER, DRAWOUT

MINIATURE CIRCUIT BREAKER

AMP
FUSE
FUSED CUT-OUT SWITCH

AMP
AMP
FUSED DISCONNECT SWITCH

AMP
NON-FUSED DISCONNECT SWITCH

AF
AT
SIZE
*
COMBINATION CIRCUIT BREAKER WITH STARTER:
FVNR = FULL VOLTAGE NON-REVERSING
FVR = FULL VOLTAGE REVERSING
2S = TWO SPEED
1W = ONE WINDING
2W = TWO WINDING
C = CONTACTOR
SFT = SOFT START

AMP
FUSE
MEDIUM VOLTAGE MOTOR STARTER

PANELBOARD

TRANSFER SWITCH (AUTOMATIC OR MANUAL)

CONVERTER OR VFD
* = ~ = AC, - = DC

HP
MOTOR

KW
KVA
GEN
PF
Z
GENERATOR

*
LOCAL CONTROL:
OP = CONTROL PANEL
HTR = HEATER
SKD = SKID MOUNTED LOAD
VFD = VARIABLE FREQUENCY DRIVE
HOA = HAND/OFF/AUTO

KV
MCOV
SURGE ARRESTOR

AMP
FUSE

BATTERY

OPEN DELTA

IMPEDANCE GROUNDED WYE

GROUND

DELTA

SOLID GROUNDED WYE

*
MULTIFUNCTION RELAY OR METER (* NOTE 5)

(QTY)
PRI:SEC
ACCUR
VOLTAGE TRANSFORMER

(QTY)
PRI/SEC
ACCUR
CURRENT TRANSFORMER
■ INDICATES POLARITY

PRI/SEC
ACCUR
CURRENT TRANSFORMER, ZERO SEQUENCE

WH
WATT HOUR METER

## RACEWAY AND LINE TYPES

CONDUIT STUB WITH CAP

CONDUIT:
EMBEDDED
EXPOSED
UNDERGROUND DIRECT BURIAL

C
CONDUIT TURN-DOWN

O
CONDUIT TURN-UP

J
JUNCTION BOX

BUS
POWER CIRCUIT
CT & VT CIRCUIT
CONTROL CIRCUIT
COMMUNICATION
ELECTRICAL ENCLOSURE
$E_X$
EXISTING OVERHEAD ELECTRICAL LINES
NEW UNDERGROUND COMMUNICATIONS DUCTBANK
NEW UNDERGROUND ELECTRICAL DUCTBANK
INDICATES CABLE NUMBER

HOME RUN CONDUIT - SHORT STROKES INDICATE PHASE OR SWITCHED WIRES, LONG STROKES INDICATE NEUTRAL, LONG STROKES WITH DOT INDICATE GROUND CONDUCTORS, LONG STROKES WITH TICK INDICATE ISOLATED GROUND

## PLAN VIEW

T
TRANSFORMER

NON-FUSED DISCONNECT SWITCH

FUSED DISCONNECT SWITCH

COMBINATION DISCONNECT WITH STARTER

HP
HORSEPOWER RATED DISCONNECT SWITCH

PANELBOARD, 480Y/277V OR 480V

PANELBOARD, 208Y/120V OR 120/240V

SERVICE ENTRANCE METER

XFR
TRANSFER SWITCH (AUTOMATIC OR MANUAL)

M
MOTOR

GEN
GENERATOR

LOCAL CONTROL PANEL

SPECIAL PURPOSE RCPT OR CONNECTION, 480V

SPECIAL PURPOSE RCPT OR CONNECTION, 240V

MH
MANHOLE

HH
HANDHOLE

*
SINGLE RECEPTACLE

*
DUPLEX RECEPTACLE

*
FOURPLEX RECEPTACLE

J
SURFACE RACEWAY (WIREMOLD)

COIL

## LIGHTING

(SEE NOTE 3)

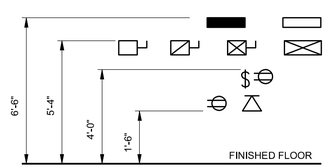
X
LED BOLLARD LIGHT

X
HID/INCANDESCENT, WALL MOUNTED

X
HID/INCANDESCENT, POLE MOUNTED

EMERGENCY BATTERY OPERATED UNIT

## ELECTRICAL DEVICE MOUNTING HEIGHT




## LIGHTING CONTINUED

EXIT SIGN, SINGLE FACE, CEILING MOUNT

EXIT SIGN, DOUBLE FACE, CEILING MOUNT

EXIT SIGN, ARROW INDICATES DIRECTION

WALL MOUNT

*
LIGHTING CONTROL:
LC = LIGHTING CONTACTOR
OC = OCCUPANCY SENSOR
PE = PHOTOELECTRIC CELL
TC = TIME CLOCK
C = CONTACTOR
PSR = PHOTO SENSOR - RECEIVER
PST = PHOTO SENSOR - TRANSMITTER

SWITCH, SINGLE POLE

*
SWITCH:
3 = THREE-WAY
4 = FOUR-WAY
D = DIMMER
K = KEY OPERATED
P = PILOT
a,b,c = DENOTES SWITCHING CONTROL

PS
SAFETY PHOTO SENSOR

ML
MAGLOCK

KP
SECURITY KEYPAD

## COMMUNICATION

TEL
TELEPHONE PANEL

TTB
TELEPHONE TERMINAL BOARD

AMP
AMPLIFIER

CCTV SURVEILLANCE CAMERA, FIXED

CCTV SURVEILLANCE CAMERA, PAN/ZOOM/TILT

WALL MOUNT

## GROUNDING

GROUND CONDUCTOR

LIGHTNING PROTECTION CONDUCTOR

GROUND

GROUND ROD

LIGHTNING PROTECTION AIR TERMINAL

LIGHTNING PROTECTION SPHERE

THROUGH ROOF TERMINAL

GROUNDING CONNECTION TO STRUCTURE

FLUSH GROUND PLATE

GROUND CONDUCTOR CONNECTION

GROUNDING PIGTAIL

## GENERAL NOTES

1. ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THIS LEGEND MAY NOT APPEAR ON THIS SET OF DRAWINGS.
2. FOR GENERAL LEGEND AND ABBREVIATIONS, SEE "GG" DRAWINGS.
3. X ON FIXTURE SYMBOL DENOTES FIXTURE TYPE DESIGNATION. SEE FIXTURE SCHEDULE.
4. USE DIRECTIONAL ARROW ON EXIT SIGNS AS REQUIRED.
5. IEEE STANDARD C37.2-1991, ELECTRICAL POWER SYSTEM DEVICE FUNCTION NUMBERS.

## ELECTRICAL ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS INDICTED MAY APPEAR ON THESE DRAWINGS

| | | | |
|---|---|---|---|
| ABOVE FINISH FLOOR | AFF | KILOVAR (REACTANCE) | KVAR |
| ABOVE FINISHED GRADE | AFG | KILOVOLT AMPERE | KVA |
| ACCENT | ACC | KILOWATT | KW |
| ADJUSTABLE | ADJ | KILOWATT HOUR METER | KWH |
| ALTERNATING CURRENT | AC | | |
| ALUMINUM | AL | LIGHT | LT |
| AMERICAN WIRE GAUGE | AWG | LIGHTING | LTG |
| AMMETER | AM | LIGHTING ARRESTOR | LA |
| AMPERE | A/AMP | LOW VOLTAGE | LV |
| APPROXIMATE(LY) | APPROX | | |
| ASYMMETRIC | ASY | MAIN CIRCUIT BREAKER | MCB |
| AUTOMATIC TRANSFER SWITCH | ATS | MAIN DISTRIBUTION PANEL | MDP |
| | | MAIN LUGS ONLY | MLO |
| BATTERY | BATT | MANHOLE | MH |
| BLACK | BLK | MANUAL TRANSFER SWITCH | MTS |
| BRACKET | BRKT | MANUFACTURER | MFR |
| BREAKER | BKR | MASTER ANTENNA TELEVISION | MATV |
| | | MECHANICAL CONTRACTOR | MC |
| CABINET | CAB | MEDIUM VOLTAGE | MV |
| CABLE TELEVISION | CATV | METAL HALIDE | MH |
| CEILING | CLG | METAL-CLAD CABLE | MC |
| CIRCUIT | CKT | MISCELLANEOUS | MISC |
| CIRCUIT BREAKER | CKT BKR | MOTOR CIRCUIT PROTECTOR | MCP |
| CLEAR | CLR | MOTOR CONTROL CENTER | MCC |
| CLOSED CIRCUIT TELEVISION | CCTV | MOTOR OPERATED DAMPER | MOD |
| COLUMN | COL | MOUNTED | MTD |
| COMMUNICATION | COMM | MOUNTING HEIGHT | MTG HT |
| CONDUIT | C | | |
| COOL WHITE | CW | NATIONAL ELECTRICAL | NEMA |
| COPPER | CU | MANUFACTURER'S ASSOCIATION | |
| CURRENT LIMITING FUSE | CLF | NATIONAL ELECTRICAL CODE | NEC |
| CURRENT TRANSFORMER | CT | NIGHT LIGHT | NL |
| | | NORMALLY CLOSED | NC |
| DECIBEL | DB | NORMALLY OPEN | NO |
| DEDICATED | DED | NOT AVAILABLE/NOT APPLICABLE | N/A |
| DIAMETER | DIA | NOT FUSED | NF |
| DIRECT CURRENT | DC | NOT IN CONTRACT | NIC |
| DISCONNECT | DISC | NOT TO SCALE | NTS |
| DISTRIBUTION PANEL | DP | | |
| DOUBLE POLE DOUBLE-THROW | DPDT | ON CENTER | OC |
| DOWNLIGHT | DNLT | OVERHEAD | OH |
| DRAWING | DWG | OVERLOAD HEATER ELEMENT | OL |
| DUAL ELEMENT | DE | | |
| | | PANEL | PNL |
| EACH | EA | PEWTER | PEW |
| ELECTRIC WATER COOLER | EWC | PLYWOOD | PLY |
| ELECTRICAL | ELEC | POLE | P |
| ELECTRICAL CONTRACTOR | EC | POLYVINYL CHLORIDE | PVC |
| ELECTRICALLY OPERATED | ED | POTENTIAL TRANSFORMER | PT |
| ELEVATION | EL | POWER PANEL | PP |
| ELEVATOR | ELEV | PULL BOX | PB |
| EMERGENCY LIGHTING | EM | | |
| ENERGY SAVING BALLAST | ESB | RAPID START | RS |
| EQUIPMENT | EQUIP | RECEPTACLE | REC/RECPT |
| EXHAUST FAN | EF | REFLECTOR | REFL |
| EXPLOSION PROOF | XP | REQUIRED | REQ'D |
| | | RIGID GALVANIZED STEEL | RGS |
| FIRE ALARM | FA | CONDUIT | RM |
| FIRE ALARM ANNUNCIATOR | FAAP | ROOM | |
| PANEL | FACP | SCHEDULE | SCHED |
| FIRE ALARM CONTROL PANEL | FAGP | SINGLE POLE DOUBLE THROW | SPDT |
| FIRE ALARM GRAPHIC PANEL | ANNUN | SINGLE POLE SINGLE THROW | SPST |
| FIRE ANNUNCIATOR PANEL | FIXT | SOLID STATE BALLAST | SSB |
| FIXTURE | FL | SURGE PROTECTION DEVICE | SPD |
| FLOOR | FLUOR | SWITCH | SW |
| FLUORESCENT | FC | SWITCHBOARD | SWBD |
| FOOTCANDLES | FLA | SWITCHGEAR | SWGR |
| FULL LOAD AMPERES | FVNR | | |
| FULL VOLTAGE NON-REVERSING | | TELEPHONE | TEL |
| GENERAL CONTRACTOR | GC | TRANSFORMER | XFMR |
| GENERATOR | GEN | TRANSIENT VOLTAGE SURGE SUPPRESSOR | TVSS |
| GROUND | GND/G | TWIN TUBE | TT |
| GROUND FAULT CIRCUIT INTERRUPTER | GFCI | TYPICAL | TYP |
| HAND DRYER | HD | | |
| HAND HOLE | HH | UNDERGROUND | UG |
| HEATING VENTILATING AND AIR CONDITIONING | HVAC | UNDERWRITERS' LABORATORIES | UL |
| HERTZ | HZ | UNINTERRUPTIBLE POWER SUPPLY | UPS |
| HIGH INTENSITY DISCHARGE | HID | UNLESS OTHERWISE NOTED | UON |
| HIGH POWER FACTOR | HPF | VAPOR PROOF | VP |
| HIGH VOLTAGE | HV | VOLT | V |
| HORSEPOWER | HP | VOLTMETER | VM |
| | | WARM WHITE | WW |
| INCANDESCENT | INCAN | WATT | W |
| ISOLATED GROUND | IG | WEATHERPROOF | WP |
| | | WITH | W/ |
| JUNCTION BOX | JB OR JCT BOX | WITHIN | W/I |
| | | WITHOUT | W/O |

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DATE
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SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:

DESIGNED BY: M.J. HILL
DRAWN BY: D.A. NELSON
CHECKED BY:
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SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
LEGEND AND ABBREVIATIONS

SHEET ID
LAGRULLA
E-001

# LIGHTING GENERAL NOTES

1. THESE PLANS ARE INTENDED TO DEPICT THE LIGHT FIXTURE POLE LAYOUT, CIRCUITING REQUIREMENTS, PHOTOMETRIC REQUIREMENTS, AND OTHER GENERAL REQUIREMENTS FOR THE LIGHT FIXTURES TO BE USED.
2. THE INTENT OF THE LIGHTING DESIGN IS A PERFORMANCE SPECIFICATION, DESIGNED TO GIVE SPECIFIC REQUIREMENTS FOR THE PERFORMANCE OF THE LIGHT FIXTURES. REFERENCE SPECIFICATIONS FOR ALL REQUIREMENTS. ANY MANUFACTURER MEETING ALL REQUIREMENTS WILL BE CONSIDERED ACCEPTABLE.
3. THE LIGHT FIXTURES FOR GENERAL ENFORCEMENT ZONE ILLUMINATION MUST MEET THE FOLLOWING PHOTOMETRIC REQUIREMENTS WITHIN THE ENFORCEMENT ZONE, AT THE LIGHT POLE HEIGHTS AND SPACING INDICATED ON THE PLANS (IN ADDITION TO OTHER REQUIREMENTS ON THE PLANS AND SPECIFICATIONS):
   - AVERAGE OF 3 HORIZONTAL FOOTCANDLES AT GRADE ACROSS THE ENTIRE ENFORCEMENT ZONE BOUNDARY INDICATED ON THE PLANS, WHICH RANGES FROM 50-150 FEET FROM THE BORDER FENCE AS SHOWN ON THE PLANS.
   - -MAXIMUM TO MINIMUM FOOTCANDLE RATIO OF 20 TO 1 WITHIN THE ENFORCEMENT ZONE.
   - -LIGHT TRESPASS BEYOND THE ENFORCEMENT ZONE SHALL BE LIMITED TO 0.5 FOOTCANDLES, AND SHALL TAPER TO BELOW 0.1 FOOTCANDLES AT A MAXIMUM OF 75 FEET BEYOND THE ENFORCEMENT ZONE BOUNDARY.
4. THE LIGHT FIXTURES AT THE VEHICULAR GATES MUST MEET THE FOLLOWING PHOTOMETRIC REQUIREMENTS WITHIN THE GATE AREAS, AT THE MOUNTING HEIGHT AND LOCATIONS INDICATED ON THE PLANS (IN ADDITION TO OTHER REQUIREMENTS ON THE PLANS AND SPECIFICATIONS):
   - ILLUMINATE A PERIMETER OF 100 FEET BY 100 FEET, CENTERED ON THE MIDDLE OF THE GATE TO A MINIMUM OF 2 FOOT CANDLES AT THE GROUND LEVEL.

# MEDIA CONVERTER GENERAL NOTES

1. MEDIA CONVERTER SHALL BE CAPABLE OF (2) INDEPENDENT FIBER OPTIC INPUTS AND (1) PoE COPPER CABLING OUTPUT. MEDIA CONVERTER SHALL AUTOMATICALLY TRANSFER BETWEEN FIBER OPTIC INPUTS AS AVAILABLE.
2. MEDIA CONVERTERS SHALL BE POWERED UTILIZING STANDARD 110V ELECTRICAL OUTLET.

# GROUNDING GENERAL NOTES

1. FENCE GROUNDING, WHERE INDICATED ON THE PLANS, SHALL CONSIST OF 3/4" X 10' GROUND ROD PER SPECIFICATIONS, WITH THE TOP OF GROUND ROD A DRIVEN A MINIMUM OF 6" BELOW THE TOP OF FINISHED GRADE. CONNECT AND BOND #6 CONDUCTOR FROM GROUND ROD TO FENCE BOLLARD AT LOCATIONS INDICATED ON PLANS. ENSURE THAT BOLLARD FENCING IS ELECTRICALLY CONTINUOUS THROUGH EITHER WELDED PLATE OR CONCRETE ENCASED REINFORCING STEEL.
2. ALL GROUNDING SHALL BE IN STRICT COMPLIANCE WITH ARTICLE 250 OF THE 2017 NATIONAL ELECTRICAL CODE.

# TRANSFER SWITCH GENERAL NOTES

1. MANUAL TRANSFER SWITCHES LOCATED AT THE VEHICLE GATES AND UTILITY CONNECTION POWER DISTRIBUTION POINTS SHALL INCLUDE CAM-LOCK STYLE CONNECTORS FOR QUICK CONNECTION OF PORTABLE GENERATORS.

# CAMERA INFRASTRUCTURE NOTES

1. THE INTENT OF THIS PROJECT IS TO INCLUDE THE NECESSARY INFRASTRUCTURE FOR FUTURE SECURITY CAMERA CONNECTIONS AT LIGHT POLES ALONG THE ENFORCEMENT ZONE BOUNDARY. CAMERAS, CAMERA MOUNTS, AND COPPER CABLING TO THE POLE MOUNTED CAMERAS FROM THE CAMERA BOXES AT THE BASE OF THE LIGHT POLES WILL BE PROVIDED AND INSTALLED BY OTHERS AS PART OF A FUTURE PROJECT. THIS PROJECT INCLUDES ONLY THE CONDUIT INFRASTRUCTURE TO THE LIGHT POLES, THE CAMERA BOXES AS DETAILED AT EVERY 6TH LIGHT POLE, AND THE MEDIA CONVERTERS WITHIN THE CAMERA BOXES.

# MINI-POWER CENTER GENERAL NOTES

1. EACH MINI-POWER CENTER AS INDICATED ON THESE PLANS SHALL BE ENCLOSED IN A WEATHERPROOF NEMA 4X ENCLOSURE, AND SHALL STEP THE VOLTAGE DOWN FROM 480V TO 120/240V, SINGLE PHASE. EACH MINI-POWER CENTER SHALL HAVE A MINIMUM INTEGRATED 3KVA TRANSFORMER WITHIN THE ENCLOSURE, AS WELL AS TRANSFORMER PRIMARY CIRCUIT BREAKER AND (8) 20A/1P SECONDARY CIRCUIT BREAKERS, FOR 120V FEEDERS TO CAMERA MEDIA CONVERTER ENCLOSURES.

# GATE GENERAL NOTES

1. PROVIDE COMMUNICATIONS AND ELECTRICAL HANDHOLE AT EACH GATE.
2. PROVIDE COMMUNICATIONS, POWER, AND CONTROLS AT EACH GATE PER DRAWINGS E-503 AND E-603

# ELECTRICAL GENERAL NOTES

1. THESE PLANS ARE SCHEMATIC. THE CONTRACT DOCUMENTS CREATED BY THIS OFFICE ARE DIAGRAMMATIC AND SHOW THE INTENTION OF THIS PROJECT TO INSTALL NEW EQUIPMENT AND ASSOCIATED MATERIALS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
2. ALL ELECTRICAL WORK IS REQUIRED TO BE PERFORMED BY A CERTIFIED ELECTRICAL CONTRACTOR. ALL WIRING, EQUIPMENT, DEVICES AND INSTALLATIONS SHALL CONFORM TO ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES.
3. PROVIDE ALL WIRING, CONDUIT, LABOR AND MATERIALS NOT SHOWN ON PLAN, BUT NECESSARY FOR COMPLETE AND PROPER OPERATION OF THE ELECTRICAL SYSTEM.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES AND PERMITS AS NECESSARY TO COMPLETE THIS JOB. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO ENSURE A COMPLETE WORKING SYSTEM.
5. ALL ELECTRICAL WORK MUST COMPLY WITH THE REQUIREMENTS OF NFPA 70 (NATIONAL ELECTRICAL CODE), NFPA 70B, NFPA 70E, IECC, OSHA IN ADDITION TO OTHER REFERENCES REQUIRED BY CONTRACT.
6. INSTALLATION OF SWITCHES, OUTLETS AND CONTROL DEVICES SHALL COMPLY WITH LOCAL CODES AND STATE ADA REQUIREMENTS.
7. REFER TO CIVIL PLANS FOR EXACT LOCATIONS OF ALL EQUIPMENT.
8. ALL ELECTRICAL EQUIPMENT, DEVICES AND CIRCUITS SHALL CONTAIN A GROUNDING CONDUCTOR. CONDUIT SYSTEM SHALL NOT BE USED AS GROUNDING NETWORK. ALL GROUNDING SHALL BE IN STRICT COMPLIANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
9. COORDINATE LOCATION AND VERIFY REQUIREMENTS OF ALL EXTERIOR UTILITY EQUIPMENT AND METER BASE WITH OWNER AND UTILITY COMPANY. UTILITY PROVIDER FOR THE PROJECT IS A.E.P. CONTRACTOR RESPONSIBLE FOR PROVIDING UTILITY SERVICE PROVIDER WITH LOAD FORMS AND ALL INFORMATION REQUIRED FOR NEW SERVICE INSTALLATION PER UTILITY COMPANY STANDARDS. COORDINATE WITH UTILITY COMPANY FOR EXACT SERVICE POINT, POLE, AND TRANSFORMER LOCATIONS.
10. UTILITY SECONDARY TRENCH AND CONDUIT REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE UTILITY COMPANY SPECIFICATIONS. COORDINATE WITH UTILITY COMPANY. PROVIDE AND INSTALL ALL MATERIAL AND EQUIPMENT AS REQUIRED FOR COMPLETE JOB INSTALLATION.
11. ALL SWITCHBOARDS, PANELBOARDS, TRANSFORMERS, DISCONNECT SWITCHES AND OTHER ELECTRICAL DEVICES AND EQUIPMENT SHALL HAVE ENGRAVED NAMEPLATES INDICATING EQUIPMENT IDENTIFICATION TAG AND VOLTAGE, AS WELL AS WHERE DEVICE IS FED FROM. ALL SWITCHBOARDS AND PANELBOARDS SHALL HAVE TYPED DIRECTORIES INDICATING DISTRIBUTION AND BRANCH CIRCUIT FEEDERS.
12. CONTRACTOR IS RESPONSIBLE FOR NATIONAL ELECTRICAL CODE REQUIRED CLEARANCES AROUND AND ABOVE ALL ELECTRICAL EQUIPMENT AND DEVICES.
13. SHORT CIRCUIT AMPERE INTERRUPTING CAPACITY (A.I.C.) RATING OF ALL ELECTRICAL PRODUCTS SHALL BE GREATER THAN THE MAXIMUM AVAILABLE SHORT CIRCUIT CURRENT.
14. WIRE AND CONDUIT SIZES SHALL BE INSTALLED AND SIZED TO COMPENSATE FOR VOLTAGE DROP PER THE NATIONAL ELECTRICAL CODE.
15. ALL ELECTRICAL AND ELECTRONIC COMPONENTS EXPOSED TO WEATHER SHALL BE RATED AT NEMA 4X; INCLUDING, BUT NOT LIMITED TO: DISTRIBUTION PANELS, JUNCTION BOXES, RECEPTACLES, OUTLETS, PERIPHERALS, SENSORS, TRANSMITTERS, KEYPADS, AND THE FASTENERS USED/CONNECTIONS MADE THEREFORE.
16. ALL LIGHT POLE AND RVSS TOWER HAND HOLES AND ACCESS PANELS BELOW 20'-0" ABOVE GROUND SHALL EMPLOY PROPRIETARY GEOMETRY, HIGH LEVEL SECURITY, TAMPER-PROOF FASTENERS THAT WILL NOT PROMOTE DISSIMILAR METALS CORROSION.

# RVSS TOWER GROUNDING GENERAL NOTES

1. AS PART OF THE WORK, THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING AND INSTALLING A EARTH ELECTRODE SYSTEM (EES) AT THE BASE OF EACH OF THE RVSS TOWER LOCATIONS INDICATED ON THE PLANS. EES SHALL BE UTILIZED FOR FUTURE CONNECTION OF TOWER GROUNDING, TOWER LIGHTNING PROTECTION, ELECTRICAL/FIBER EQUIPMENT AND ENCLOSURE GROUNDING, FENCING / BOLLARDS, AND RVSS UPS EQUIPMENT GROUNDING. FINAL CONNECTIONS TO FUTURE OR OWNER PROVIDED EQUIPMENT NOT INDICATED TO BE INSTALLED ON THESE PLANS SHALL BE BY OTHERS.
2. ALL GROUNDING AT RVSS TOWERS SHALL CONFORM TO FAA-STD-019E AS A MINIMUM.
3. GROUNDING ELECTRODE SYSTEM SHALL BE USED FOR LIGHTNING PROTECTION OF THE FUTURE RVSS TOWER, AND AS SUCH, SYSTEM SHALL BE INSTALLED AND LABELED IN ACCORDANCE WITH ALL UL 96A AND NFPA 780 REQUIREMENTS.
4. SITE SURVEY: A SITE SURVEY SHALL BE CONDUCTED BY THE CONTRACTOR FOR BOTH RVSS SITES INDICATED ON THESE PLANS TO DETERMINE THE GEOLOGICAL AND OTHER PHYSICAL CHARACTERISTICS OF THE SURROUNDING EARTH. INFORMATION TO BE COLLECTED SHALL INCLUDE LOCATION OF ROCK FORMATIONS, GRAVEL DEPOSITS, SOIL TYPES ETC. PERFORM A SOIL RESISTIVITY TEST AT PROBE SPACINGS OF 10, 20, 30 AND 40 FEET IN FOUR DIRECTIONS FROM THE PROPOSED RVSS TOWER AND EQUIPMENT. ALL SURVEY DATA, INCLUDING SOIL RESISTIVITY MEASUREMENTS, SHALL BE NOTED ON A SCALED DRAWING OR SKETCH OF THE SITE AND SUBMITTED TO THE ENGINEER FOR REVIEW.
5. SHOP DRAWINGS: CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF THE PROPOSED EES TO THE ENGINEER FOR REVIEW AND APPROVAL, INDICATING LOCATIONS OF ALL GROUNDING ELECTRODES, GROUNDING CONDUCTORS, AND OTHER GROUNDING ACCESSORIES AS REQUIRED. THE EES SHALL CONSIST OF AT LEAST (4) DRIVEN GROUND RODS (CONFIGURATION AND DEPTH BASED ON SOIL TEST), SUPPLEMENTAL GROUNDING ELECTRODES (IF REQUIRED), AND BURIED INTERCONNECTING CONDUCTORS. THE SITE SURVEY INFORMATION SHALL BE USED AS THE BASIS FOR THE DESIGN OF THE EES. THE RESISTANCE TO EARTH OF THE EES SHALL BE NOT OVER 10 OHMS. WHERE CONDITIONS ARE ENCOUNTERED SUCH AS ROCK NEAR THE SURFACE, SHALLOW SOILS, PERMAFROST AND SOILS WITH LOW MOISTURE OR MINERAL CONTENT, A SUPPLEMENTAL GROUNDING ELECTRODE MAY BE REQUIRED TO BE USED.
6. SUPPLEMENTAL GROUNDING ELECTRODES: GROUND DISSIPATION PLATES MAY BE USED. IN SHALLOW SOIL LOCATIONS WITH LIMITED SURFACE SPACE, GROUND DISSIPATION PLATES SHALL BE ALLOWED IN PLACE OF GROUND RODS IN THE EARTH ELECTRODE SYSTEM (EES). THE PLATES SHALL BE INSTALLED AT THE CORNERS OF THE EES AT THE FARTHEST ACCESSIBLE POINT FROM THE RVSS TOWER. PLATES SHALL BE CONSTRUCTED OF A MINIMUM ONE QUARTER-INCH THICK COPPER AND BE A MINIMUM OF TWO FEET SQUARE. THESE PLATES SHOULD BE INSTALLED IN A VERTICAL PLANE TO TAKE ADVANTAGE OF SEASONAL MOISTURE AND TEMPERATURE CHANGES IN THE SOIL. INSTALL THE PLATES AT THE SAME DEPTH OR DEEPER THAN THE INTERCONNECTING CONDUCTOR, BUT MAINTAIN A MINIMUM OF ONE-FOOT OF NATIVE SOIL ABOVE THE UPPER EDGE OF THE PLATE. ATTACHMENT TO THE EES SHALL BE WITH A 4/0 AWG BARE STRANDED COPPER CONDUCTOR, EXOTHERMICALLY WELDED TO THE EES AND THE PLATE. THE ATTACHMENT POINT AT THE PLATE SHALL BE AT THE CENTER OF THE PLATE, NOT NEAR THE EDGE OR THE CORNERS. THEY SHALL BE CONFIGURED AS A JORDAN DISSIPATION PLATE DESIGN OR EQUAL.
7. INTERCONNECTIONS: GROUND RODS AND GROUNDING ELECTRODES OF THE EES SHALL BE INTERCONNECTED BY A BURIED, BARE, 4/0 AWG COPPER CONDUCTOR. THE CONDUCTOR SHALL BE BURIED AT 30" BELOW GRADE LEVEL. CONNECTIONS TO THE GROUNDING ELECTRODES SHALL BE EXOTHERMICALLY WELDED. THE INTERCONNECTING CONDUCTOR SHALL CLOSE ON ITSELF FORMING A COMPLETE LOOP WITH THE ENDS EXOTHERMICALLY WELDED. THE BONDING RESISTANCE OF ALL INTERCONNECTIONS SHALL BE ONE MILLIOHM OR LESS FOR EACH BOND WHEN MEASURED WITH A 4-TERMINAL MILLIOHM METER.
8. A MINIMUM OF ONE ACCESS WELL SHALL BE INSTALLED FOR THE EES. THE WELL SHOULD BE LOCATED AT A GROUND ROD THAT IS IN AN AREA WITH ACCESS TO THE OPEN SOIL SO THAT CHECKS OF THE EES CAN BE MADE ONCE THE FACILITY IS IN USE. THE ACCESS WELL SHALL BE MADE FROM CLAY PIPE, POURED CONCRETE, OR OTHER APPROVED WALL MATERIAL AND SHALL HAVE A REMOVABLE COVER. THE ACCESS WELL SHALL BE CONSTRUCTED TO PROVIDE A MINIMUM CLEARANCE (12 INCHES RADIUS) FROM THE CENTER OF THE GROUND ROD TO THE INSIDE WALL OF THE ACCESS WELL. THE ACCESS WELL SHALL HAVE AN OPENING OF A MINIMUM 12 INCH RADIUS. CONNECTIONS SHALL BE BY EXOTHERMIC WELDS.
9. CONTRACTOR SHALL STAKE OUT THE EXACT LOCATION OF THE BURIED GROUND LOOP CONDUCTOR IN THE FIELD AFTER INSTALLATION, SO THAT IT CAN BE TIED INTO WITH EQUIPMENT AND TOWER GROUND CONDUCTORS BY OTHERS WITH MINIMUM EXCAVATION.
10. GROUND RODS SHALL BE COPPER CLAD STEEL, MINIMUM 10 FEET IN LENGTH AND 3/4" IN DIAMETER. ROD CLADDING SHALL NOT BE LESS THAN 1/100" THICK. GROUND RODS SHALL BE AS WIDELY SPACED AS POSSIBLE, AND IN NO CASE SPACED LESS THAN ONE ROD LENGTH. TOPS OF GROUND RODS SHALL BE NOT LESS THAN 6 INCHES BELOW GRADE LEVEL.
11. GROUND LOOP CONDUCTOR TRENCH SHALL BE EXCAVATED TO 36" BELOW GRADE. CONDUCTOR SHALL BE INSTALLED AT 30" BELOW GRADE. BOTTOM 12" OF TRENCH SHALL BE BACKFILLED WITH BENTONITE/EARTH MIX BACKFILL. REMAINDER OF TRENCH SHALL BE BACKFILLED WITH COMPACTED BACKFILL.
12. CONTRACTOR SHALL PROVIDE AND INSTALL A 24" X 2" X 1/4" COPPER GROUND BAR ON THE INTERIOR WALL OF THE RVSS TOWER EQUIPMENT SHELTER, WITH ISOLATORS AND PRE-DRILLED GROUNDING HOLES. CONNECT GROUND BAR WITH 4/0 AWG GROUND CONDUCTOR TO GROUND LOOP. GROUND BAR SHALL BE USED FOR PANEL/TRANSFORMER/EQUIPMENT GROUNDING CONNECTIONS PER CODE REQUIREMENTS WITHIN EQUIPMENT SHELTER.
13. THE GROUNDING SYSTEM SHALL BE CONSTRUCTED IN ACCORDANCE WITH UL 96 AND NFPA 780 REQUIREMENTS. CERTIFICATION SHALL BE PERFORMED BY AN INDEPENDENT, THIRD-PARTY INSPECTION FIRM. THE INSPECTION FIRM CANNOT BE THE SYSTEM DESIGNER OR INSTALLER.

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| MARK | DESCRIPTION | DATE |
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ISSUED DATE:
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DESIGNED BY: M.J. HILL
DRAWN BY: D.A. NELSON
CHECKED BY:
SUBMITTED BY:
SIZE: ANSI D

US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

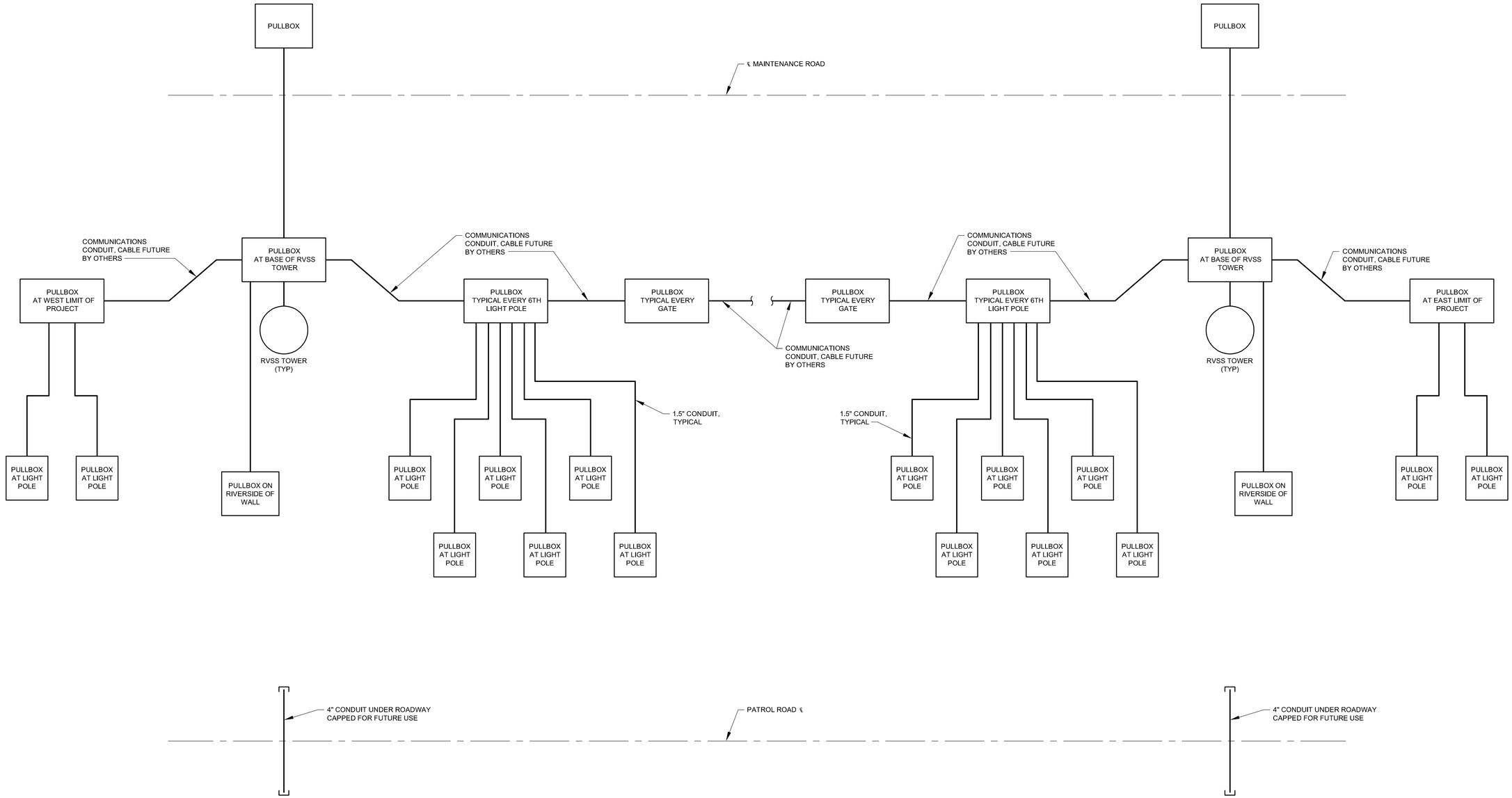
ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

ROV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL AND COMMUNICATION NOTES

SHEET ID
LAGRULLA
E-002

NOTES:

1. DUCTBANK AND QUANTITY AND SIZE OF CONDUITS BY CONTRACTOR TO BE COORDINATED WITH OWNER.




# CONCEPTUAL OVERALL COMMUNICATIONS CONDUIT INFRASTRUCTURE

NO SCALE

US Army Corps of Engineers ®

| DATE | DESCRIPTION | MARK |
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17218 PRESTON RD., SUITE 3300
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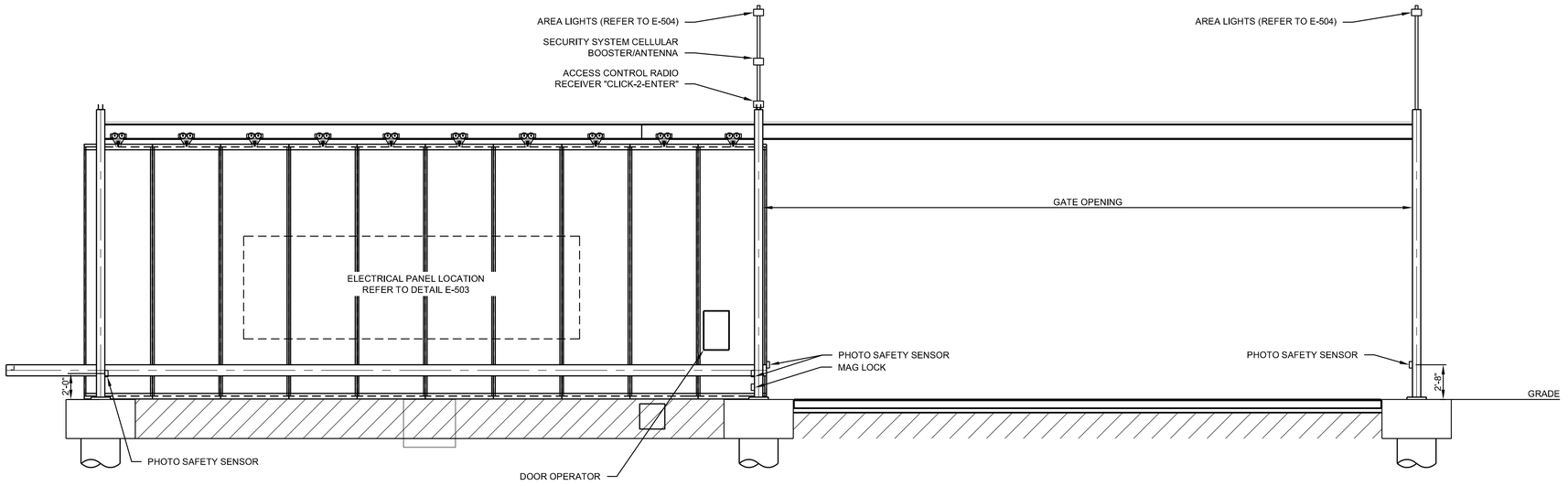
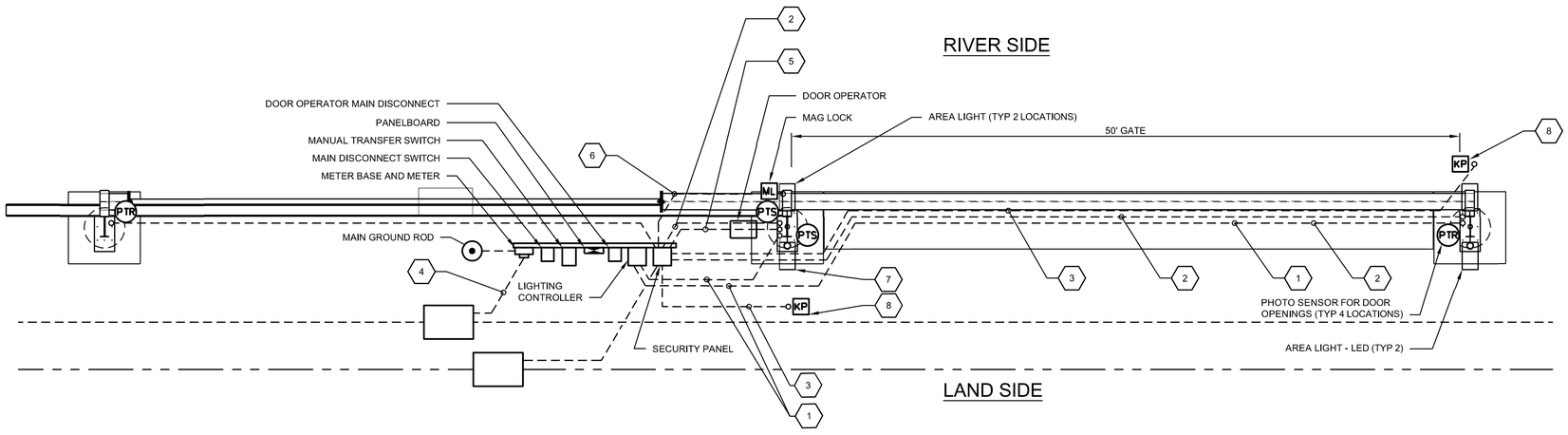
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
CONCEPTUAL OVERALL CAMERA CONDUIT INFRASTRUCTURE

SHEET ID
LAGRULLA
E-101




## GATE PHOTOELECTRIC BEAM DEVICES MOUNTING HEIGHTS

SCALE: 3/16" = 1'-0"




## GATE ELECTRICAL LAYOUT - RIGHT SIDE LAYOUT

SCALE: 3/16" = 1'-0"

AT FULL SIZE

0 1 2 3 IN

0 1 2 3 4 5 6 7 8 cm

## GENERAL NOTES

1. RATING OF THE MANUAL TRANSFER SWITCH'S TRANSFER PANEL "QUICK COUPLING" SHALL BE COORDINATED WITH THE SIZE OF THE ANTICIPATED MOBILE EMERGENCY GENERATOR.
2. KEYPADS MAY NEED TO BE RE-LOCATED TO REFLECT ACTUAL SITE CONDITIONS.
3. MAGLOCK SHALL BE PLACED UNDER GATE OPERATOR.
4. UNLESS NOTED OTHERWISE, RUN UNDERGROUND CONDUITS LOCATED ALONG AND IN THE VICINITY OF THE GATE OPENING UNDER THE 4' WIDE x 8" DEEP GATE OPENING CONCRETE SLAB.

## XX KEYED NOTES

1. POWER FOR AREA LIGHTS - 1" SCHEDULE 80 - TO LIGHTING CONTACTOR.
2. CONDUIT FOR PHOTO SAFETY SENSOR - 1" SCHEDULE 80 - TO SECURITY.
3. CONDUIT FOR SECURITY KEYPAD - 1" SCHEDULE 80.
4. CONDUIT FOR CONNECTION TO RGV-06 POWER DUCTBANK SCHEDULE 80.
5. CONDUIT FOR "CLICK-TO-ENTER" AND CELLULAR ANTENNA SYSTEM - 1" SCHEDULE 80.
6. CONDUIT FOR MAGNETIC LOCK - 1" SCHEDULE 80.
7. FIXTURE IDENTIFIED SHALL BE CONNECTED TO BATTERY CIRCUIT. SEE DETAIL E-605.
8. PROVIDE GOOSENECK MOUNTING ARM AND CONCRETE BASE FOR MOUNTING OF KEYPAD. SEE CIVIL PLANS FOR EXACT LOCATION OF KEYPADS.

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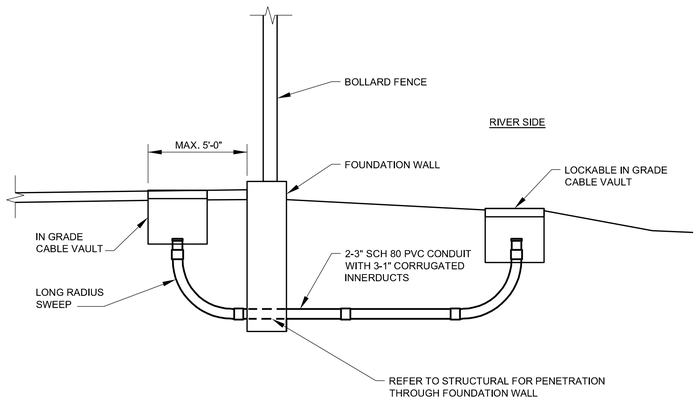
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL SINGLE GATE - PLAN VIEW
50 FEET SINGLE LEAF AUTOMATED GATE

SHEET ID
LAGRULLA
E-102



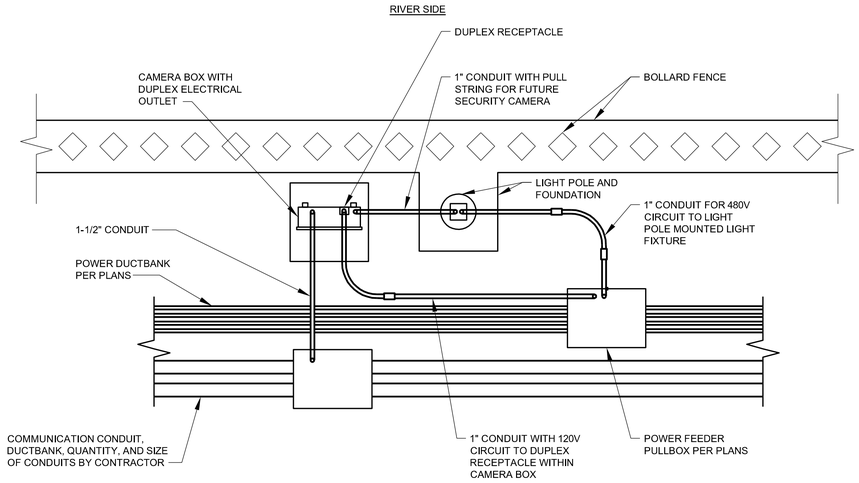

## SECTION

NOTES:

1. IN ADDITION TO PENETRATIONS FOR RVSS TOWERS PROVIDE AT BEGINNING AND END OF EACH CONTRACT WALL SEGMENT FOR FUTURE CONNECTIONS.

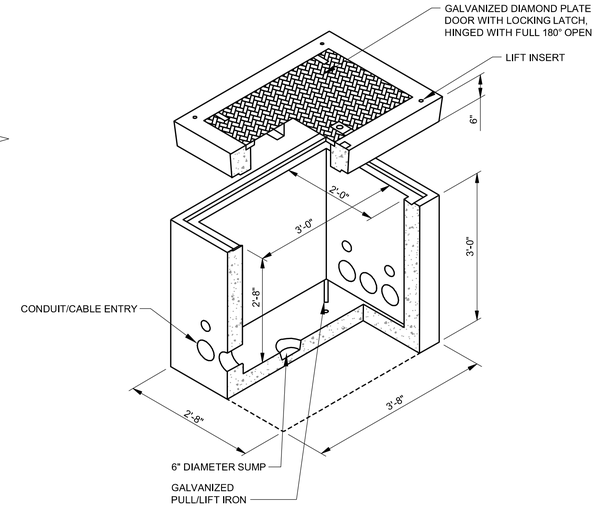
## COMMUNICATIONS CONDUIT ROUTING TO RIVERSIDE

NO SCALE



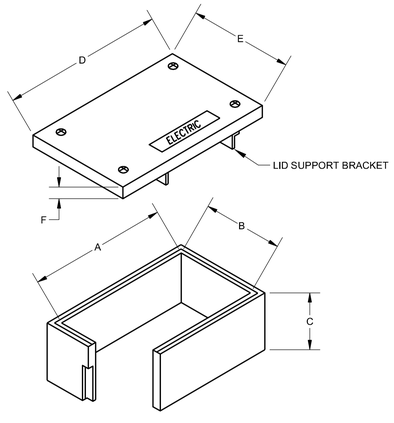

## TYPICAL PLAN VIEW AT LIGHT POLES

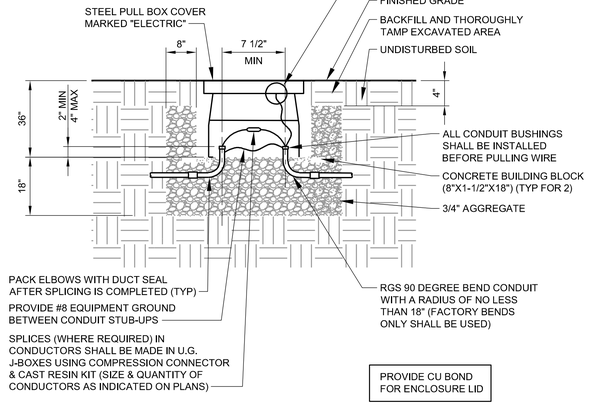
NO SCALE




## UNDERGROUND COMMUNICATION CABLE VAULT DETAIL (RIVER SIDE)

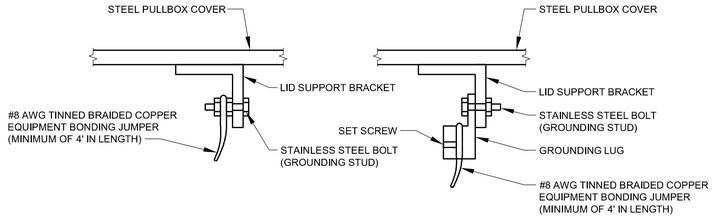
NO SCALE




NOTES:

1. INSTALL A 1/4"-20 NC X 3/4" STAINLESS STEEL GROUNDING STUD TO THE LID SUPPORT MEMBER(S) ON THE BOTTOM OF LID BY DRILLING A HOLE THROUGH THE "L", "C", OR "T"-SHAPED SUPPORT MEMBER. SECURE GROUNDING STUD AND BONDING JUMPER WITH TWO (2) STAINLESS STEEL NUTS AND FLAT WASHERS.
2. SECURE GROUNDING LUG TO THE LID SUPPORT MEMBERS TO THE BOTTOM OF LID BY DRILLING A HOLE THROUGH THE "L", "C", OR "T"-SHAPED SUPPORT MEMBER AND INSTALLING A 1/4"-20 NC X 3/4" STAINLESS STEEL GROUND STUD. INSERT BONDING JUMPER INTO GROUNDING LUG AND SECURE WITH SET SCREW.




## TYPICAL HANDHOLE / PULL BOX DETAIL (COMM AND POWER, SECURE SIDE)

NO SCALE

US Army Corps of Engineers ®

DATE | DESCRIPTION | MARK

ISSUED DATE:
SOLICITATION NO.:
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DESIGNED BY: M.J. HILL
DRAWN BY: D.A. NELSON
CHECKED BY:
SUBMITTED BY:
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GALVESTON, TX 77553-1229

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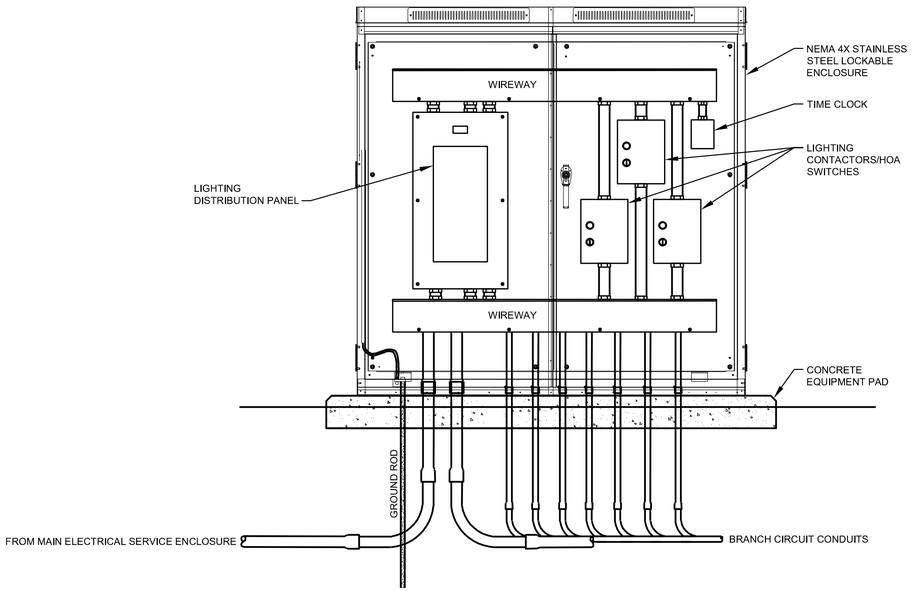
DALLAS, TX, 75252

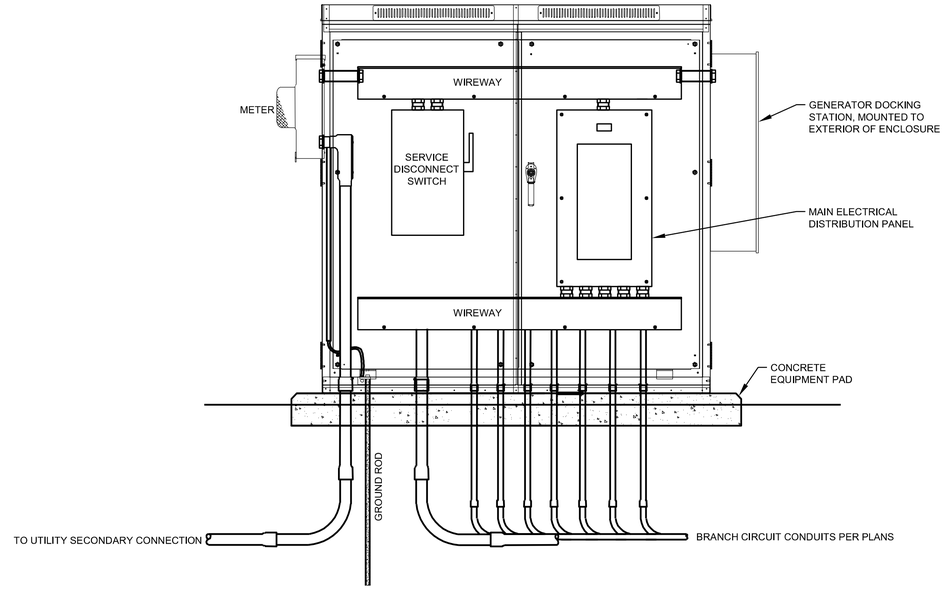
RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
CONDUIT ROUTING DETAILS

SHEET ID
LAGRULLA
E-501



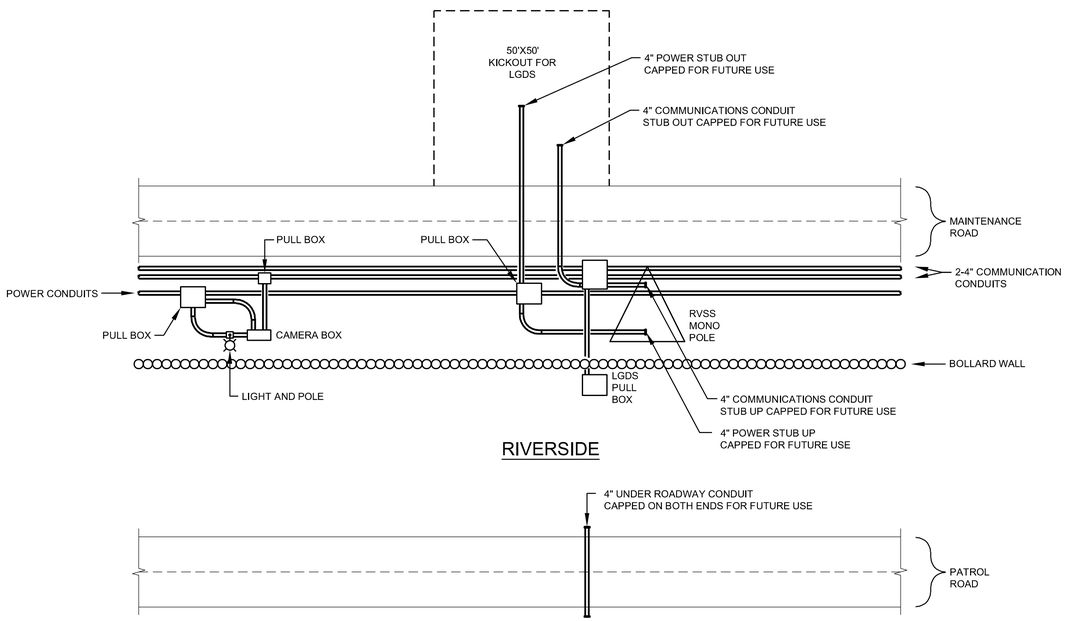

## TYPICAL LIGHTING DISTRIBUTION ENCLOSURE

NOT TO SCALE




## TYPICAL UTILITY CONNECTION POINT ELECTRICAL SERVICE ENCLOSURE

NOT TO SCALE




## RVSS TOWER TYPICAL PLAN VIEW

NOT TO SCALE

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|---|---|---|
| | | |

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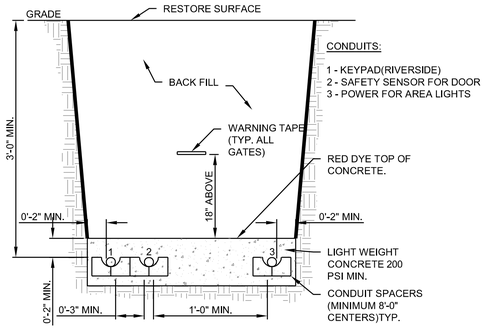
DALLAS, TX, 75252

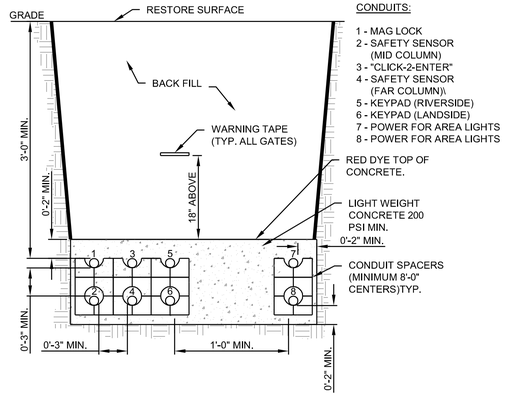
RGV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
RVSS TOWER YARD EQUIPMENT DETAILS

SHEET ID
LAGRULLA
E-502



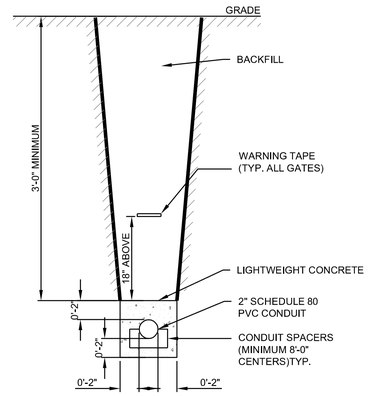

## GATE POWER, SECURITY, AND CONTROLS DUCT BANK SECTION

NO SCALE



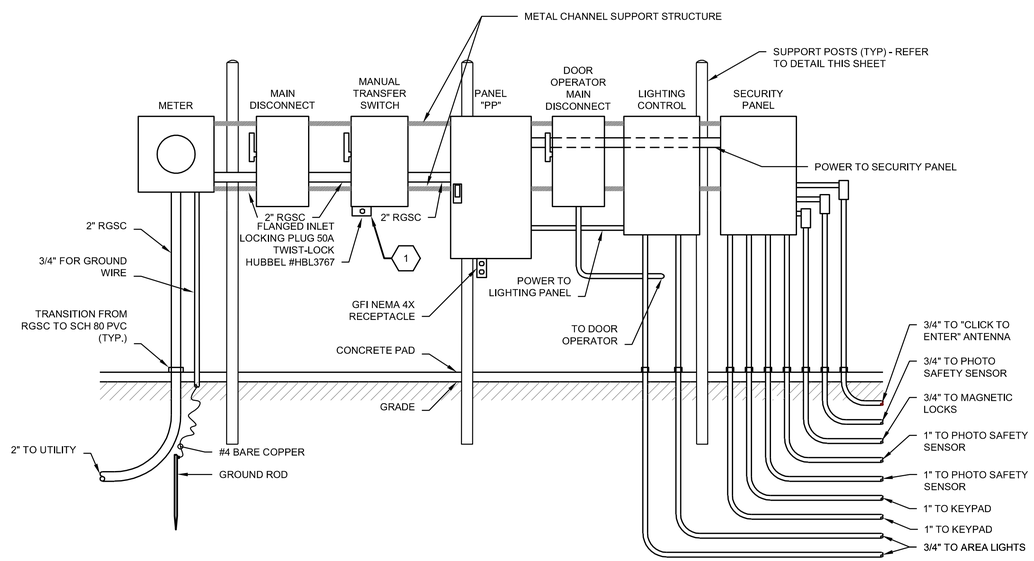

## GATE POWER, SECURITY, AND CONTROLS DUCT BANK SECTION

NO SCALE



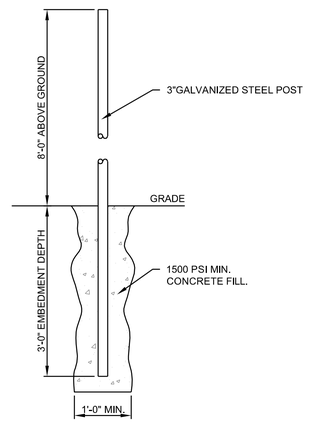

## ELECTRICAL SERVICE DUCT BANK

NO SCALE




## GATE POWER, SECURITY, AND CONTROLS PANEL ELEVATION DETAIL

NO SCALE




## MOUNTING POLE DETAIL

NO SCALE

## GENERAL NOTES

1. PROVIDE SUPPORT POSTS AND UNISTRUT MOUNTING RAILS AS REQUIRED. ALL STRUCTURE, CLAMPS AND ACCESSORIES SHALL BE CORROSION RESISTANT.
2. ALL BELOW GRADE CONDUIT SHALL BE SCHEDULE 80 PVC.
3. ALL ABOVE GRADE CONDUIT SHALL BE RIGID GALVANIZED STEEL CONDUIT.
4. ALL HARDWARE SHALL BE STAINLESS STEEL, WHERE POSSIBLE.
5. UNDERGROUND CONDUITS SHALL BE CONTINUOUSLY MARKED WITH FOIL-BACKED ELECTRICAL WARNING TAPE "CAUTION - ELECTRICAL LINE BURIED BELOW" WARNING TAPE SHALL BE INSERTED 18" ABOVE THE CENTER OF THE TOP OF THE CONDUITS.
6. WHERE ELECTRICAL EQUIPMENT IS EXPOSED TO THE ENVIRONMENT PROVIDE NEMA 4X ENCLOSURES. PROVIDE WEATHERPROOF ENCLOSURES FOR RECEPTACLES.

## KEYED NOTES

1. THE FLANGED INLET LOCKING PLUG SHALL BE INSTALLED WITH A GASKET BETWEEN THE PLUG AND THE ENCLOSURE

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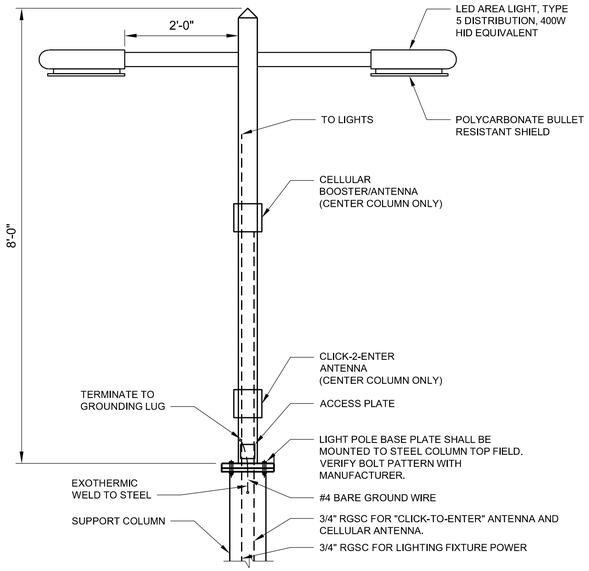
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

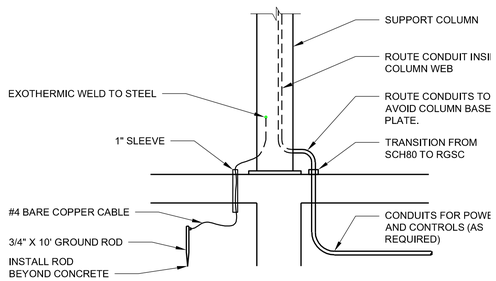
ROV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL DETAILS - SHEET 1
50 FEET SINGLE LEAF AUTOMATED GATE

SHEET ID
LAGRULLA
E-503



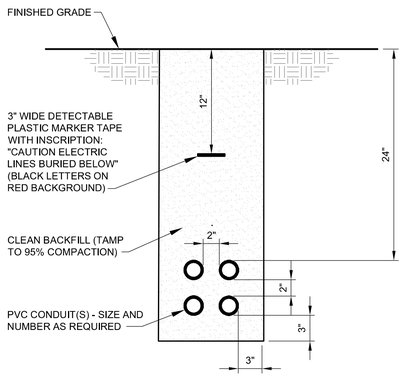

## GATE LIGHT POLE DETAIL

NO SCALE



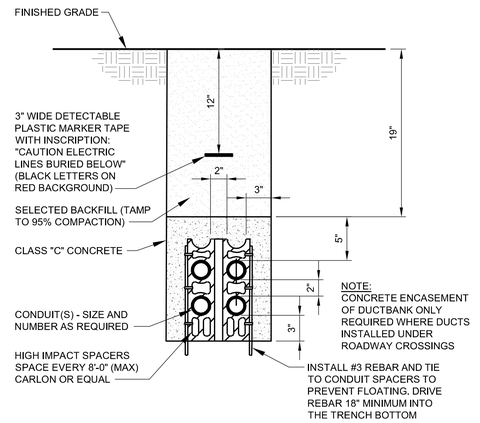

## GATE POLE DETAIL AT COLUMN BASE

NO SCALE



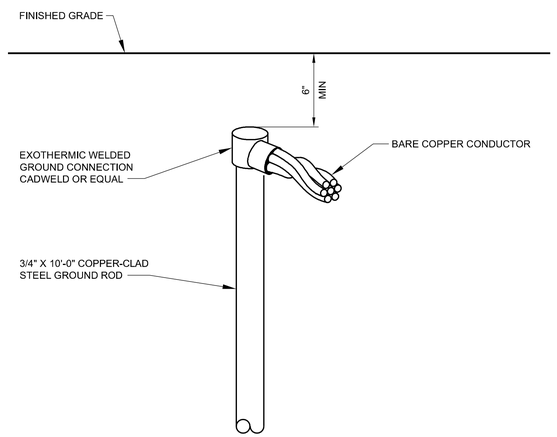

## TYPICAL DIRECT BURIED DUCTBANK DETAIL

NO SCALE



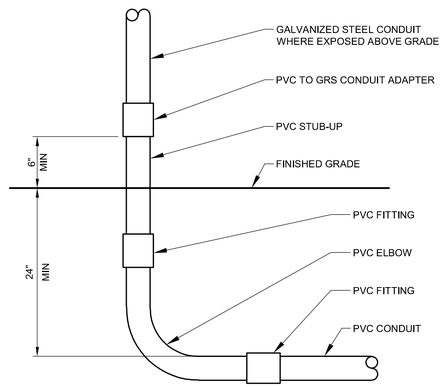

## TYPICAL CONCRETE ENCASED DUCTBANK DETAIL

NO SCALE




## TYPICAL GROUND ROD DETAIL

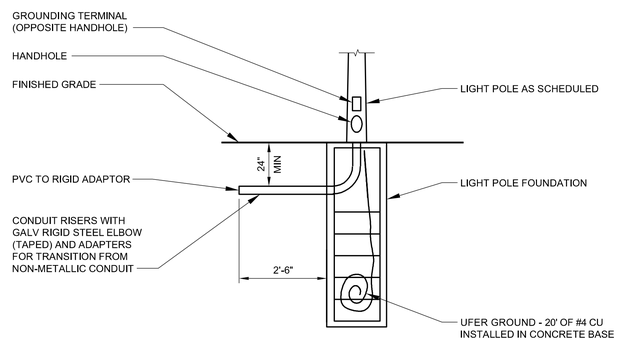
NO SCALE




NOTE:
WHERE CONDUITS ARE RUN IN SLAB, THE 24" DIMENSION DOES NOT APPLY.

## TYPICAL CONDUIT STUB-UP DETAIL

NO SCALE




## TYPICAL LIGHT POLE GROUNDING DETAIL

NO SCALE

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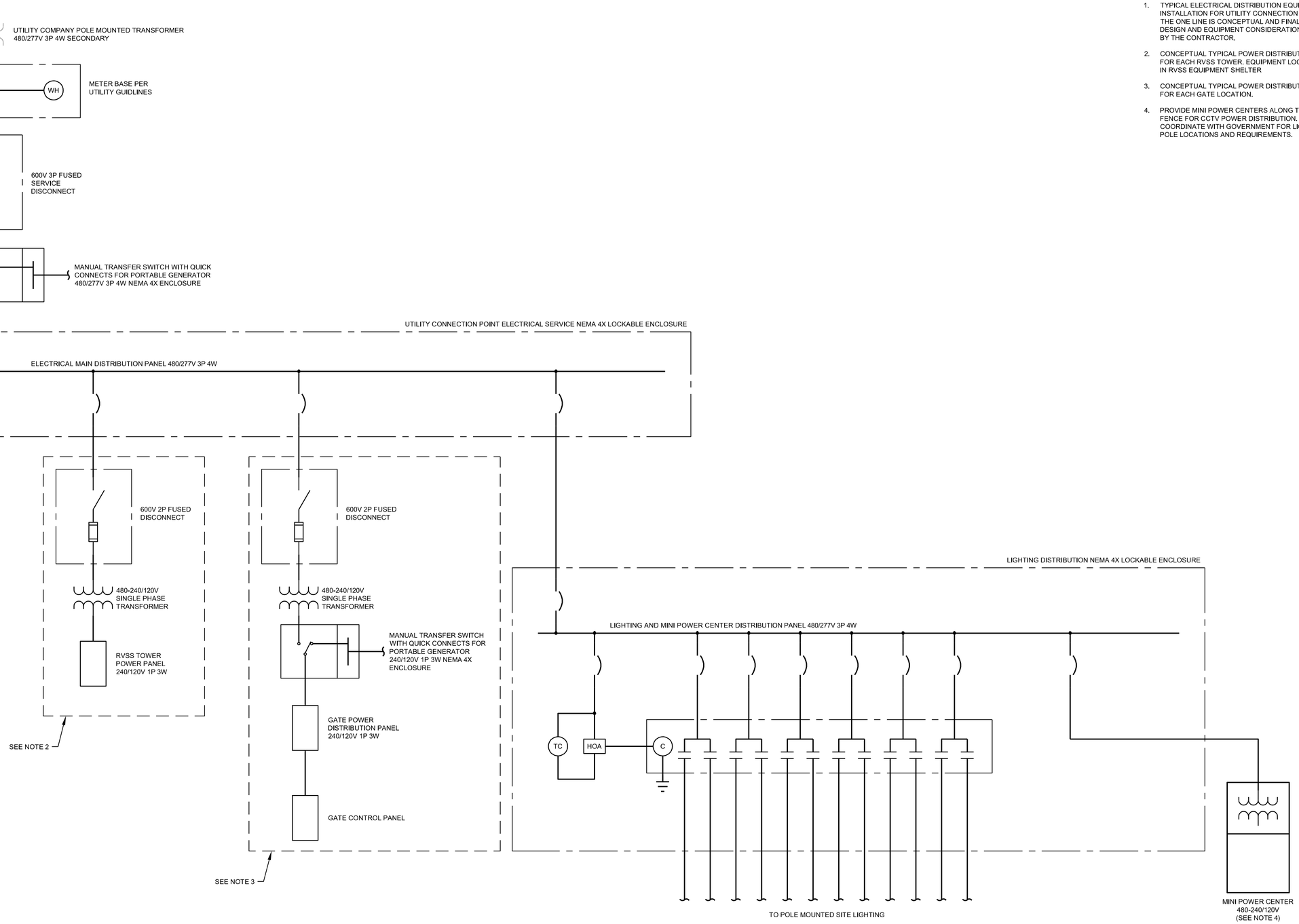
2000 FORD POINT ROAD
GALVESTON, TX 77553-1229

ETEGRA
17218 PRESTON RD., SUITE 3300
DALLAS, TX, 75252

RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL DETAILS - SHEET 2
50 FEET SINGLE LEAF AUTOMATED GATE

SHEET ID
LAGRULLA
E-504




NOTES:

1. TYPICAL ELECTRICAL DISTRIBUTION EQUIPMENT INSTALLATION FOR UTILITY CONNECTION POINT. THE ONE LINE IS CONCEPTUAL AND FINAL DESIGN AND EQUIPMENT CONSIDERATIONS ARE BY THE CONTRACTOR.
2. CONCEPTUAL TYPICAL POWER DISTRIBUTION FOR EACH RVSS TOWER. EQUIPMENT LOCATED IN RVSS EQUIPMENT SHELTER
3. CONCEPTUAL TYPICAL POWER DISTRIBUTION FOR EACH GATE LOCATION.
4. PROVIDE MINI POWER CENTERS ALONG THE FENCE FOR CCTV POWER DISTRIBUTION. COORDINATE WITH GOVERNMENT FOR LIGHT POLE LOCATIONS AND REQUIREMENTS.

# CONCEPTUAL UTILITY SERVICE POINT ELECTRICAL ONE-LINE DIAGRAM

NO SCALE

US Army Corps of Engineers ®

| MARK | DESCRIPTION | DATE |
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RGV 06 - BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
CONCEPTUAL ONE-LINE DIAGRAM

SHEET ID
LAGRULLA
E-601

## Panel: PP

Location:
Supply From: MTS
Mounting: Surface
Enclosure: NEMA 4X

Volts: 240/120V
Phases: 1 P
Wires: 3 Wire

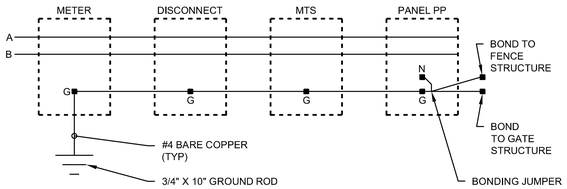
A.I.C Rating: 10,000
Mains Type: MCB
Mains Rating: 200A
MCB Rating: 200A

| CKT | Circuit Description | Trip | Poles | A | | B | | Poles | Trip | Circuit Description | CKT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | DOOR OPTR (7.5HP) | 70A | 2P | 2460 | 0 | | | 2P | 20A | SURGE SUPPRESSOR | 2 |
| 3 | - | - | - | | | 2460 | 0 | - | - | - | 4 |
| 5 | GFCI OUTLETS | 20A | 1P | 180 | 400 | | | 1P | 20A | SECURITY PANEL | 6 |
| 7 | LIGHTS | 20A | 1P | | | 723 | 1000 | 1P | 20A | SECURITY PANEL | 8 |
| 9 | LIGHTS | 20A | 1P | 241 | - | | | 1P | 20A | Spare | 10 |
| 11 | Spare | 20A | 1P | | | - | - | 1P | 20A | Spare | 12 |
| 13 | Spare | 20A | 1P | - | - | | | 1P | 20A | Spare | 14 |
| 15 | Spare | 20A | 1P | | | - | - | 1P | 20A | Spare | 16 |
| 17 | Spare | 20A | 1P | | | | | 1P | 20A | Spare | 18 |
| 19 | Spare | 20A | 1P | | | - | - | 1P | 20A | Spare | 20 |
| 21 | Spare | 20A | 1P | - | - | | | 1P | 20A | Spare | 22 |
| 23 | Spare | 20A | 1P | | | - | - | 1P | 20A | Spare | 24 |
| | | | Total Load: | 3281 | VA | 4183 | VA | | | | |
| | | | Total Amps: | 27.3 | Amps | 34.9 | Amps | | | | |

| Load Classification | Connected Load | Demand Factor | Estimated Demand | Panel Totals |
|---|---|---|---|---|
| Power | 1303 | 100% | 1303 | Total Conn. Load (VA): 7187 |
| Lighting | 964 | 125% | 1205 | Total Est. Demand (VA): 7428 |
| Motor/HVAC | 4920 | 100% | 4920 | Total Amps: 31.0 |
| | | | | |

## GATE ELECTRICAL PANEL SCHEDULE

NO SCALE




## GATE GROUNDING DETAIL

NO SCALE

| LUMINAIRE SCHEDULE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TYPE | GENERAL DESCRIPTION | LIGHT SOURCE DATA | | | | DRIVER/BALLAST | | POWER DATA | | |
| | | LAMP TYPE | QTY x WATTS/LAMP | LAMP CODE/LED MODULE | LED DELIVERED LUMENS | CONTROL TYPE | DIMMING | SUPPLY VOLT | WATTS PER FIXT. | NOTES |
| | POLE MOUNTED LIGHT FIXTURE, 27FT POLE. REFERENCE SPECIFICATIONS FOR REQUIREMENTS FOR POLE, FIXTURE, AND ACCESSORIES | LED | BY CONTRACTOR | FURNISHED WITH FIXTURE | BY CONTRACTOR | NA | 0-10V | 480V | 1200W MAX | |

## SITE LUMINAIRE SCHEDULE

NO SCALE

## GENERAL NOTES

1. ALL ELECTRICAL EQUIPMENT SHALL BE RATED NEMA 4X
2. ALL ELECTRICAL EQUIPMENT SHALL BE RATED FOR 10KAIC MINIMUM.
3. ALL CONDUCTORS SHALL BE #12 AWG UNLESS NOTED OTHERWISE

## CALCULATIONS

ASSUMPTIONS:

TRANSFORMER SIZE: 25kVA
IMPEDANCE: 1.58 Z (ESTIMATED)
UPSTREAM BUS CAPACITY: INFINATE
DISTANCE FROM TRANSFORMER: 50FT

SHORT CIRCUIT CURRENT:

IFL = (XFMR SIZE x 1000) / (VOLTAGE(LINE-LINE))

IFL = (25 x 1000) / (240) = 104.16A

IsC = IFL / %Z

IsC = (104.16A) / (.0158) = 6592 AMPS MAX

M = 1 / (1+F)

F = (2x(DISTANCE) x IsC) / ((CONSTANT) x (VOLTAGE))

F = (2 x 50FT x 6592A) / (13923 x 240) = 0.1972

M = 1 / (1 + 0.1972) = .8352

IsC(actual) = (6592 x 0.8352) = 5506A

PANEL BOARD MINIMUM
AIC = 10K AIC

## ABBREVIATIONS

M = MULTIPLIER
F = FACTOR
IsC = SHORT CIRCUIT CURRENT

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DATE
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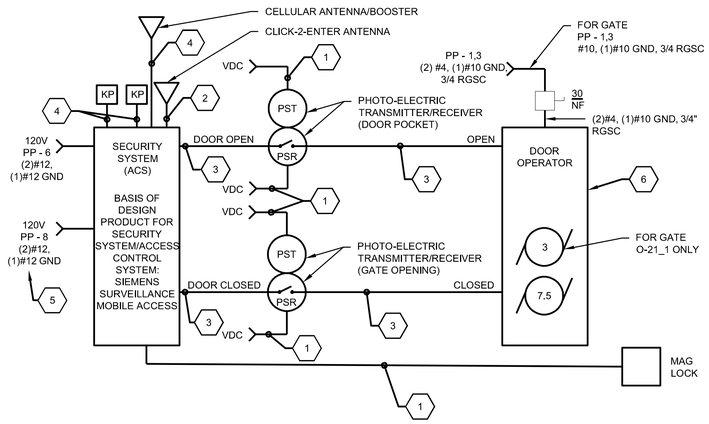
RGV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL SCHEDULES & DIAGRAMS
50 FEET SINGLE LEAF AUTOMATED GATE

SHEET ID
LAGRULLA
E-602

| LUMINAIRE SCHEDULE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TYPE | GENERAL DESCRIPTION | LIGHT SOURCE DATA | | | | DRIVER/BALLAST | | POWER DATA | | | |
| | | LAMP TYPE | QTY x WATTS/LAMP | LAMP CODE/LED MODULE | LED DELIVERED LUMENS | CONTROL TYPE | DIMMING | SUPPLY VOLT | WATTS PER FIXT. | MANUFACTURER AND CATALOG NUMBER SERIES | NOTES |
| A | DSX1 LED P9 50K T5W MVOLT (LITHONIA LIGHTING) | LED | NA | FURNISHED WITH FIXTURE | 28805 | NA | 0-10V | 120V | 241 | DSX1 LED P9 50K T5W MVOLT (LITHONIA LIGHTING) | |

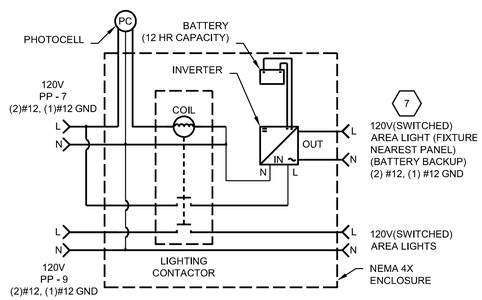
## GATE LUMINAIRE SCHEDULE

NO SCALE




## GATE CONTROL DIAGRAM

NO SCALE




## GATE LIGHTING CONTACTOR DIAGRAM

NO SCALE

## SHEET NOTES

1. 2 #12 (POWER) FROM SECURITY PANEL
2. 2 #12 (POWER) + 2 #16 (DOOR OPEN SIGNAL)
3. 2 #16 (CONTROL)
4. SPECIALITY CABLE PER MANUFACTURER
5. POWER FOR CELLULAR ANTENNA BOOSTER. EXTEND CONDUCTORS/CONDUIT TO DEVICE LOCATION.
6. BASIS OF DESIGN PRODUCT FOR DOOR OPERATOR IS: DOOR KING 9575 W/ HEAVY DUTY HOUSING OPTION.
7. CONNECT TO ONE FIXTURE NEAREST TO PANELS (LANDSIDE)

US Army Corps of Engineers ®

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|---|---|---|
| | | |

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ETEGRA
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ROV 06- BORDER INFRASTRUCTURE
CONSTRUCTION PROJECT RIO GRANDE VALLEY (RGV)
CONSTRUCTION OF BARRIER FENCE
ELECTRICAL CONTROL SCHEMATIC
50 FT. SINGLE LEAF AUTOMATED GATE

SHEET ID
LAGRULLA
E-603